University Of Alberta

Explanations of Drunk Driving Recidivism:

an Exploratory Analysis

by

Michael Martin Theodore Weinrath ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Department of Sociology

Edmonton, Alberta

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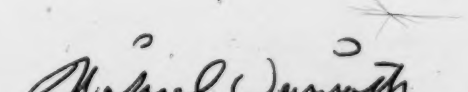

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DEDICATION

I dedicate this to my father Ted Weinrath, who taught me about life.

ABSTRACT

This dissertation investigates why people persist in drinking and driving. Possible explanations were derived from specific deterrence, low self-control and strain/stress theories and hypotheses were tested in an integrated, exploratory model using official records (n= 692) and interview data (n= 145) covering the period between 1989-1993. Recidivism was assessed using new convictions and self-report data. Relationships between repeat drunk driving and punishment, traits of low self-control, stress and coping resources were explored in both bivariate and multivariate analyses.

My investigation provides some support for the notion that longer sentences will deter drunk driving recidivism. More lenient sentences such as intermittent weekend and fine default did not encourage recidivism. Perceived stress had a moderate effect on the likelihood of repeat drunk driving. Registered Indians were moderately more likely to drink and drive, while Metis did not exhibit greater or lesser recidivism than the general population. Overall, results did not support the general theory of crime. Generally, recidivism rates were lower than this theory predicted. Contrary to predictions of the general theory, "low self-control" offenders were deterred, and stress did not have a differential impact on them. Coping resources such as education, employment and social support did not appear to reduce recidivism. The strongest and most consistent recidivism predictors involved alcohol consumption. As a crime, drunk driving is not as well-explained by traditional criminological theories as predatory offences are.

From a policy perspective, the results of this dissertation suggest that drunk driving would be discouraged in some cases by longer sentences. However, intermittent sentences appear to be used appropriately by the courts for lower risk cases. Treatment programs focussing on stress management, reduced alcohol consumption and specific drinking avoidance strategies are recommended to reduce recidivism.

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Going back to University in your mid to late thirties is not a simple undertaking. It's made easier, though, when you have the support of friends and family. Gordon Telford and my colleagues from Alberta Justice never let me doubt that I had made the right choice to pursue academe. Most critically, though, my wife Janet and children, Gillian and Teddy, were always supportive of the late hours and weekends consumed by my program. With a strong family behind you, there is not too much that cannot be accomplished.

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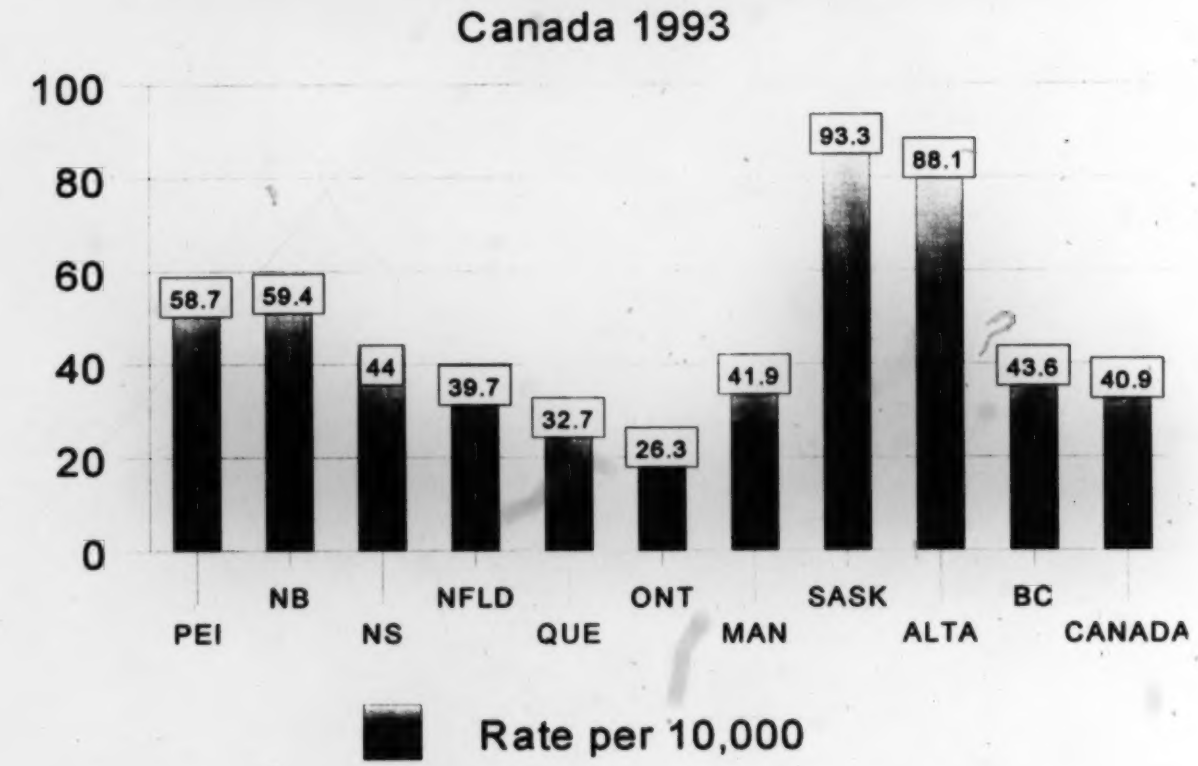
CHAPTER 1 INTRODUCTION

1.1 The Problem Of Drunk Driving

Most North Americans drive automobiles and most North Americans also enjoy alcoholic beverages. Separately, these pursuits may bring pleasure, but together, they may bring pain. Drunk driving is a serious social concern. In Canada in 1992, a staggering 4,728 drivers died in motor vehicle crashes where alcohol was a factor (Transport Canada 1993). This official total represents 22 percent of all traffic fatalities that year and it is likely an underestimate. Researchers examining coroner records in recent years suggest that alcohol related fatalities constitute between 38 percent to 50 percent of all fatal crashes (Birkenmeyer 1995; Simpson and Mayhew 1992). This is double the official rate, and total alcohol related vehicular fatalities in 1992 would more accurately be estimated at between 9,000 to 10,000.

Estimates of traffic fatalities only begin to present a picture of the damage from impaired driving. Drunk driving results in significant fiscal costs. Medical, law enforcement, property, and insurance costs bring the estimated lifelong cost of a single fatal collision to $771,000 (Alberta Transportation 1994). Lifetime major injury collision costs are $515,000 per case. Alcohol related injury collisions totalled 40,955 in Canada in 1992 and these fiscal costs do not begin to measure the emotional impact on families and friends of victims (PAID/REID 1992). A large number of Canadians continue to face impaired driving charges: 117,567 charges were laid nation wide in 1993. The Canadian rate was 40.9 charges per 10,000 population, while Alberta was over twice the national average at 88.1 charges per 10,000 population (Graph 1.1). Convicted drunk drivers face a series of sanctions for their behaviour. Licence suspensions, fines, custody terms, and treatment programs are all intended to discourage impaired driver's from repeating their offence. Yet despite these interventions, an offender group has been identified that persists in drunk driving, even after being caught and sanctioned. These people are over-represented in both fatal and non-fatal alcohol related crashes. Some drunk drivers persist in their behaviour despite progressively larger fines, longer licence suspensions and

Impaired Driving Rates



Graph 1.1 *Source: Transport Canada*

custody terms, and more intensive treatment. Simpson and Mayhew (1992) have dubbed this group "hardcore drinking drivers". These researchers and others (Beerman et. al. 1988; Gould and Gould 1992; Hedlander and Fell 1995; Peck et. al. 1994) have observed that this group tends to exhibit more severe drinking problems and involvement in other types of crime. A large literature on impaired driving in general exists, yet relatively little is known about why this hardcore group persists in this deviant behaviour.

Impaired driving research has attempted to explain recidivism by focussing on offender attributes such as a propensity for risk taking behaviours (Jonah 1990), and by examining the impact of sanctions such as custody or treatment (Peck 1991). Unfortunately, past studies have tended to ask monocausal questions, focussed on one or two specific causes, or used comparison designs. These strategies have resulted in narrow debates over the virtues of treating versus punishing drunk drivers. In an effort to expand our limited knowledge on drunk driving recidivism, this thesis attempts to address some of the gaps in the literature and examines a number of possible explanations. I have incorporated three criminological theories into an exploratory, integrated model. Using a sample of incarcerated drunk drivers, the model assessed the impact on the decision to drink and drive again of criminal justice sanctions (use of custody and treatment), offender attributes (prior deviant behaviours, age, social support), and social stressors (Aboriginal status, perceived stress, physical disabilities, critical life events). The integrated model and longitudinal approach offered several advantages. They helped to assess the long-term effects of criminal justice interventions on offenders, control for alternative explanations, and examine the influence of individual and social factors over time that may have affected drunk driving persistence.

1.2 Social Control Efforts Aimed At Impaired Drivers

Over the past 20 years Canada and other Western nations have developed a number of social control strategies in an effort to manage drunk driving, which is also referred to as impaired driving, driving under the influence, or by acronyms such as DUI

(Beirness, Mayhew and Simpson 1994; Ross 1992). Primary prevention attempts to discourage the general motoring public from driving drunk through programs such as police checkstops, server intervention, designated driver programs and media advertising. These programs target the general population to keep potential impaired drivers off the road. Secondary prevention programs are aimed directly at changing the behaviour of individuals convicted of drunk driving and take the form of sanctions such as fines, incarceration, licence suspension, alcohol treatment and, most recently, on-board breathalyser devices that prevent drinking drivers from starting their cars through an ignition interlock.

Primary interventions emphasizing general deterrence have been associated with reduced rates of impaired driving. However, this effect is often difficult to disentangle from the effects of other concurrent interventions, such as public education (Ross 1992; Homel 1988). It is "normal" for several preventative programs to be running simultaneously. The overall effectiveness of general deterrence may be attenuated by the small probability of apprehension when driving drunk. It is estimated that only 1 in 1000 impaired driving trips is detected by police (Summers and Harris 1978).

Evaluations of secondary program interventions can claim only modest effects on convicted impaired drivers (8 to 9% reduction in recidivism). However, these drunk driving program evaluations have often lacked in both theoretical and methodological rigour (Wells-Parker, Bangert-Drowns, McMillen and Williams 1995). In a recent meta-analysis, Wells-Parker and her colleagues concluded that more rigorous research, conducted for better run programs, might show a more powerful impact on recidivism.

To assess the potential benefits of social control efforts in discouraging repeat drunk driving, I examined the influence and interplay between various social interventions, offender attributes and social situations, and their effect on recidivism. In other words, did

interventions such as custody or treatment reduce drunk driving, and was their effectiveness impacted by individual risk factors and social situations?

1.3 Sociological And Criminological Research Concerning Impaired Drivers

Impaired driving research has been dominated by psychologists specializing in the area of addictions. Their research interests lie primarily in problem drinking diagnosis and treatment efficacy. Other psychological research links drunk driving and high risk driving (e.g., speeding, dangerous driving, collisions), viewing the two as symptomatic of a general problem behaviour syndrome (Donovan and Jessor 1985; Donovan, Marlatt and Salzburg 1983). Individuals with a problem behaviour syndrome are thought likely to be involved in a variety of deviant behaviours, because of a propensity for risk taking and a lack of internal and external controls. As adolescents, these risk-takers are thought likely to be involved in drug use, high risk and drunk driving, delinquency and negative peer groups. In a parallel development, criminologists have developed social psychological theories to explain crime that emphasize individual pathology over environmental circumstances. The general theory of crime (Gottfredson and Hirschi 1990; Keane, Maxim and Teevan 1993) and the generality of deviance theory (Gould and Gould 1992; Osgood, Johnson, O'Malley, and Bachman 1988) have explained drunk driving as a function of individual traits such as low self-control and concurrent involvement in deviant, pleasure seeking behaviours (e.g., alcoholism, drug use, smoking).

The use of low self-control theories to explain the etiology of impaired driving is relatively recent. Criminologists have largely focussed on the effects of general deterrence (Gramsick et. al. 1993; Homel 1988; Nichols and Ross 1990; Wieczorek, Mirand and Callahan 1994), and the impact of various primary interventions on the certainty, celerity and severity of punishment. These empirical studies have attempted to estimate changes over time, in the incidence of drunk driving, and have sought the explanations for these changes in various primary prevention countermeasures (e.g., changes in penalties, per se laws, advertising campaigns).

The possible existence of a general problem behaviour trait is an important consideration in any effort to explain drunk driving persistence. I have used this trait to try and distinguish recidivists from non-recidivists. Presence of low self-control was also assessed as a possible explanation for why deterrence or treatment efforts work more effectively for some offenders, but not others.

Contemporary criminological theories of strain (Agnew 1992) have not been used to directly explain drunk driving or its recidivism. In sociology, medical models of stress and well-being have not been well integrated with criminological theories of strain. The notion that stress perceived or experienced at the individual level (as predicted by Agnew's theory), would likely lead to repeat drunk driving certainly has some merit. This is supported by psychological research, which has shown some links between stress, alcohol addiction, and DUI behaviour (MacIntyre 1990, Veneziano, Veneziano and Fichter 1994).

The integrated strain/stress model I have developed for my thesis uses stressors and stress mediators to try and account for drunk driving persistence. This model assessed stress along a number of dimensions. Individual level strain was assessed through stress and well being perceptions of social actors (drunk drivers). Stress was also evaluated as a processual factor, such as a critical life events (loss of spouse or job), and the influence of chronic stressors such as physical disability. Coping resources such as social support were used to assess the possible conditioning effect of stress mediators on DUI recidivism.

1.4 Setting the Context of Drunk Driving as Crime

The deviant behaviour of drunk driving is particularly useful in exploring these theoretical explanations, because this offence differs in many ways from other behaviours defined as crimes.

Compared to other crimes, individual motivation for drunk driving is unclear. Criminal offences such as theft or fraud appear motivated by profit. In the case of violent offences that are not profit or sex related, offenders direct their behaviour specifically at other individuals in order to resolve situational frustration. Theft, fraud, and violence present as purposeful behaviours that result in some gain for individual offenders. It is difficult to view drunk driving as an activity aimed at personal profit, aside from the inconvenience of a cab ride home. Illicit drug use crimes are similar to drunk driving because they do not involve any gain, yet even this activity seems more rationally organized than drunk driving. Typically, individuals arrange their activities to use drugs, and "get high." In contrast, people do not generally drive drunk for feelings of euphoria. They simply drive home after a period of drinking.

Social attitudes are more ambivalent toward drunk driving than other crimes. Drunk driving is not as universally denounced as predatory crimes such as theft, assault and fraud. Society condemns more consistently even a white collar crime such as corporate price fixing. Most people in most situations recognize stealing, beating someone, or taking money from a business as negative behaviour. Conspiring to cheat customers for profit is not as easily detected as other crimes, but once identified, this offence generally receives severe approbation. Social attitudes also are more ambivalent towards drug use than DUI. Society more often views illicit drug users as pathological. Driving home drunk usually does not bring with it a label of alcoholic. Most Canadians condone having a few drinks in a social setting but view as deviant taking illicit drugs.

There are several possible explanations for ambivalent social reactions to drunk driving compared to other crimes. Compared to predatory crimes, no preconceived intent exists to harm others, nor is there any intent to profit from drunk driving. As a criminal event, drunk driving tends to be less logically sequenced than other crimes, because of its spontaneous nature and the inconsistency of harmful outcomes from each impaired driving episode. In contrast, criminal events such as assault leave someone victimized, while

property crimes result in an individual's loss of items or wealth. Drunk driving often (but not always) occurs during the course of social drinking, hurtful outcomes are rare, and hence, detection is unlikely.

Still, DUI and drunk drivers can receive severe social censure. Society castigates drunk driving that results in vehicle collisions. Drunk drivers involved in such cases receive the label "killers" and alcoholics, particularly if they have a record of prior convictions. Most often, however, people "under the influence" appear to drive home safely.

Is drunk driving so significantly different from other crimes that it limits the applicability of criminological explanations that generally have dealt with predatory offences? Are deterrence, low self-control and stress theories likely to be effective in explaining DUI persistence as they have been for predatory crime? Given the apparent differences in individual motivation and societal reaction towards drunk driving, a significant research question involves determining whether these three mainstream criminological theories offer the same ability to help us understand why people drink and drive. My dissertation results will allow us to more fully consider this question.

1.5 Drunk Driving Recidivism

While the death toll from drunk driving remains high, overall official rates of drunk driving have been declining in Canada and the United States over the past 10 years (Birkenmeyer 1995). This general decline has been loosely attributed to the general deterrent effect of a host of primary countermeasures, as well as a downward trend in alcohol consumption by an aging, more health conscious and risk aversive "baby boom" population (Birkenmeyer 1995; Ross 1992; Simpson and Mayhew 1992). Even so, drunk driving persists in the face of public knowledge of escalating impaired driving penalties such as higher fines, longer licence suspension and more frequent and lengthier custody terms. From the deterrence point of view, the failure to eradicate impaired driving is

attributed to the low probability of detection. Aside from the gradual decline in the last decade, larger gains are likely difficult because of the very high costs of increasing the probability of detection (e.g., more police, equipment). Probably, the public would react negatively against intrusive measures such as more stringent laws governing alcohol consumption, or the introduction of breathalyser units in all motor-vehicles to prevent their operation after drinking.

We must also bring the problems created by drunk drivers into perspective. Ross (1992) cautions that impaired driving recidivists do not appear to account for a large or even moderate amount of all alcohol-related crashes. Even in alcohol related fatalities, most drivers are not over the legal limit of .08 impairment. In fact, only about one in seven drivers in fatalities who blow over .08 have a record for a prior DUI (drive under the influence). Ross argues that focussing attention on the myth of the repeat "killer impaired driver" group may detract from efforts to improve road safety. By omission, such an emphasis may even be seen to condone drinking and driving amongst the general population.

Clearly, an attempt to understand persistent drunk driving should not be at the expense of research and policies aimed at the overall reduction of drunk driving. Recidivists still contribute to a significant proportion of motor vehicle collisions, and the understanding of whether deviant behaviour persists in the face of heavy sanctions is worthwhile in its own right. If research decisions were based on a calculus of social damage alone, then criminologists would abandon street crime and delinquency in order to spend their efforts in retail outlets, corporate boardrooms, and political legislatures. These are the places where employee theft, corporate crimes, and political deviance yield a greater cost to the public (Snider 1992; Corrado, Olierio and Lauderdale 1992).

Simply because they continue to reoffend, recidivists distinguish themselves from the public generally and from most offenders. Their deviant behaviour persists despite

receiving a full array of socially imposed impaired driving sanctions. If the odds of being apprehended are indeed less than 1 in 1000, then DUI recidivists represent an even more curious phenomena. They keep getting caught. Prolific drinking or other recurring deviant behaviour may bring them to the attention of police. Given the increasingly severe penalties associated with drunk driving, impaired driving recidivists pose a puzzle different from that posed by career criminals, who avoid the ties of employment and at least receive some measure of financial reward for their deviant activities (Blumstein, Cohen and Farrington 1988).

My thesis attempts to answer a number of questions necessary to the understanding of impaired driving recidivism. I used official records and self-report data to examine two integrated exploratory models involving deterrence, low self-control (the general theory of crime) and strain/stress theories. This data originated from a retrospective follow-up evaluation study I conducted of incarcerated impaired drivers. I based this study upon records data gathered from a wide variety of sources and a brief follow-up interview with a small subsample. This generated time one (in jail, taking treatment) and time two (2-4 years later, interviewed in community) observations. Repeat impaired driving was examined as an event or behaviour that arose out of an interplay of social control efforts, individual offender characteristics, and social processes that they encountered such as life events and stressors. My thesis looks at the effect of social control efforts by the justice system, particularly sentence type (such as custody, intermittent sentences and fine defaults), and treatment programs. I have also attempted to incorporate theories of individual self-control (e.g., low self-control, analogous deviant acts) along with models of social and life event stress (e.g., social status, divorce, physical disability) and the influence of coping strategies and resources (education, employment, social support).

Although exploratory in nature, my dissertation represents an extensive examination of drunk driving persistence. I derive several testable propositions from

explanations of deviant behaviour, examine whether the derived propositions are empirically supported, attempt a melding of different types of explanations, and suggest implications for further research and for social policy. My use of three theoretical perspectives expands the scope of the analysis, and improves our potential understanding of repeat drunk driving. Minimally, use of three theories helps my thesis account for alternative explanations. The temporal sequence of the data allow for DUI recidivism to also be viewed as a process, rather than just as a single event. These considerations introduce several questions. For example, are offender attributes most salient to recidivism, do prison terms have any effect, or do critical life events play a role in subsequent re-involvement in the justice system?

For theory development, this study gives me the opportunity to assess the relative strengths of deterrence theory, general theory and strain/stress theories in explaining repeat DUI, as well as providing some possible guidance on the use of integrated models. From a policy perspective, insights gained into the effectiveness of prison terms or treatment, and the possible influence of antecedent conditions (e.g., Aboriginal status, prior drunk driving) as well as subsequent life events (residence change, loss of spouse or job) should help in the development of secondary interventions.

CHAPTER 2 THEORIES EXPLAINING DRUNK DRIVING AND ITS RECIDIVISM

In an effort to seek out explanations for the persistence of drunk driving, my thesis draws upon several criminological theories which have sought to address the persistence of deviant behaviour. Both deterrence and low self-control theories presume that offender motivation is non-problematic. All individuals are assumed by nature to be seekers of pleasure and avoiders of pain. This utilitarian assumption is consistent with the conception of drunk driving and its persistence as risk-taking in pursuit of pleasure (Donovan, Marlatt and Saltzer 1983). On the other hand, strain theories of deviance would see persistence in drinking and then driving as a maladaptive response to social pressure, consistent with research linking stress and DUI (MacIntyre 1990, Veneziano et. al, 1994).

Not surprisingly, deterrence, strain and low self-control theories also suggest very different types of remedies to prevent DUI recidivism. Deterrence theory would support more effective punishment to discourage drunk driving. Strain theory would seek to identify different coping strategies which could be taught to perpetrators to help them remove or ameliorate stressors or stressful situations. Low self-control theory suggests that interventions of any sort are futile. Drunk drivers will simply, gradually "age out" of their problem behaviour and other remedies will not be particularly effective.

The incorporation of conceptions derived from these three different theories is intended to add significantly to the validity of conclusions discerned by my thesis. The inclusion of propositions derived from all three types of explanations for the persistence of deviance broadens the scope of the analysis and allows the thesis to build a foundation on different themes in the criminological literature. In order to pursue this line of enquiry, my thesis will first elaborate each of these theories in an attempt to derive propositions. These propositions will in turn guide the design of the empirical research.

2.1 DETERRENCE

Deterrence theory in criminology is based upon the classical utilitarian assumption that people seek to maximize pleasure and minimize pain. Social actors break rules and laws to gain pleasure, unless sufficient threat of pain exists to discourage such behaviour. This explanation for criminal behaviour is associated with 18th century classical theorists Cesare Beccaria and Jeremy Bentham, who first espoused the three fundamental principles of effective deterrence: swiftness, certainty, and severity of punishment.

Deterrence has been conceptually distinguished as general and specific punishment. Punishment here refers broadly to any intervention brought to bear by the criminal justice system including apprehension, interim detention, sentencing severity and follow-up controls such as probation or parole. "General deterrence" refers to the impact of criminal sanctions on society at large, or potential offenders. "Specific deterrence" describes the effect of social sanctions on individual offenders. Deterrence is the underlying principle guiding operation of the Western criminal justice system, and is linked strongly to legalistic notions of "free will" (Duffee 1980), which assume actors make rational, purposeful decisions to commit crimes.

Contemporary criminologists and economists have looked for indicators to measure the three deterrent principles of swiftness, certainty and severity in order to test "rational choice" explanations of crime in general, and impaired driving specifically. Rational choice theory explains crime as a series of calculations by individual actors, who weigh the likely benefits of an illegal behaviour against the potential costs (Becker 1968). In the case of impaired drivers, the pleasure and ease of drinking and driving home is weighed against the probability of detection, arrest if detected, conviction if arrested, and degree of punishment if convicted. Deterrence theory argues that people generally will be less likely to drink and drive if they believe in the swiftness, certainty and severity of punishment for this behaviour. Individuals who get caught drinking and driving will be

deterred specifically if their punishment is swift, certain and severe. Studies on general deterrence have shown that certainty and swiftness have the most consistent deterrent impact on drunk driving, while severity shows mixed effects (Ross 1992; Homel 1988).

From a sociological perspective, the impact of sanction severity on repeat impaired driving merits investigation, given the mobilization of interest groups such as PAID (People Against Impaired Driving) and MADD (Mothers Against Impaired Driving) around this issue. They consistently lobby for longer sentences. In addition, both the symbolic and concrete consequences of government legislation are worthy of investigation, particularly since substantial social resources are committed to specific deterrence.

2.1.1 Specific Deterrence: Licence Suspension and Custody

Research concerning the effects of specific deterrence on impaired driving has examined relationships between drunk driving recidivism, type of sanction, and sanction severity. Licence suspensions have been repeatedly shown to be a relatively cost-effective means of reducing impaired driving recidivism, when compared against fines, treatment programs, and custody (Mann, Vingilis, Gavin, Adlaf and Anglin 1991; McKnight and Peck 1991; Sadler Peck and Perrine 1986; Voas 1991). Drunk driving interest groups such as PAID support licence suspension, but also lobby loudly for certain and longer custodial sentences (PAID/REID 1992). However, some researchers argue that licence suspensions are ineffective punishments, because so many people drive while suspended (Ross and Gonzales 1988). Licence suspensions are still likely to reduce collisions, however, because suspended drivers drive more cautiously to avoid detection (Ross and Gonzales 1988). A carry-over learning effect may exist when licences are reinstated, thereby reducing license collision rates after licences are returned to drunk drivers.

The effectiveness of licence sanctions is well documented, but the effects of incarceration have not been reliably established. Nonetheless, criminal justice policy

makers, lobby groups and the public at large still often argue that the longer the sentence, the greater the deterrence against reoffence. For this reason alone, such a proposition merits attention.

Proposition 1: **Impaired drivers who receive longer sentences will be less likely to recidivate than those who do not.**

For heuristic purposes, I have expressed the proposition above in a manner consistent with criminal justice system principles. In fact, research has not found consistent support for this proposition. The literature on the specific deterrent effect of custodial sentences shows little evidence of deterrent effects for short or long periods of incarceration. In a review of both international and North American studies regarding the effectiveness of jail sentences, Nichols and Ross (1990) found only a single study that demonstrated a reliable deterrent effect. That particular deterrent was a 2-day mandatory jail sentences for first offenders in Tennessee (Jones, Joksch, Lacey and Schmidt 1988). Even then, the reduction in recidivism for the jailed group compared to the non-jailed group was evident for only the first 24 months of follow-up. Differences in reoffence disappeared after three years of follow-up. Two other studies using multivariate analysis found contradictory effects for longer jail sentences given to repeat offenders. Peck (1991) reported a deterrent effect for longer sentences for repeat impaired drivers in California, but this effect appeared attributable to less opportunity to recidivate (more time spent in custody). Peck did not find a deterrent effect for short sentences on first offenders. In a study of 1,000 impaired drivers in Australia, Homel (1981) found that longer sentences of incarceration were no more effective than short ones, and that longer sentences actually appeared associated with an increased likelihood of repeat driving under the influence (DUI). However, Homel was unable to account totally for the possibility of selection effects for those persons with longer sentences. In the only Canadian study on the deterrent effect of custody, Mann et. al. (1991) found no relationship between days in

jail and recidivism when controlling for other sanctions such as treatment, licence suspension and fines.

The lack of a consistent relationship between the length of sentence and repeat DUI deterrence may be attributable to deterrence thresholds: a "tipping effect" hypothesized by Tittle and Logan (1973). For example, the deterrent effect on the individual social actor may not change from six months to two years incarceration, but sentences less than six months may have a decreased deterrent effect. Offenders may not perceive sufficient penalty from short periods of custody, but past some point, their removal from society may be onerous enough to provide a deterrent effect. Of course, shorter sentences may be no more effective than longer ones.

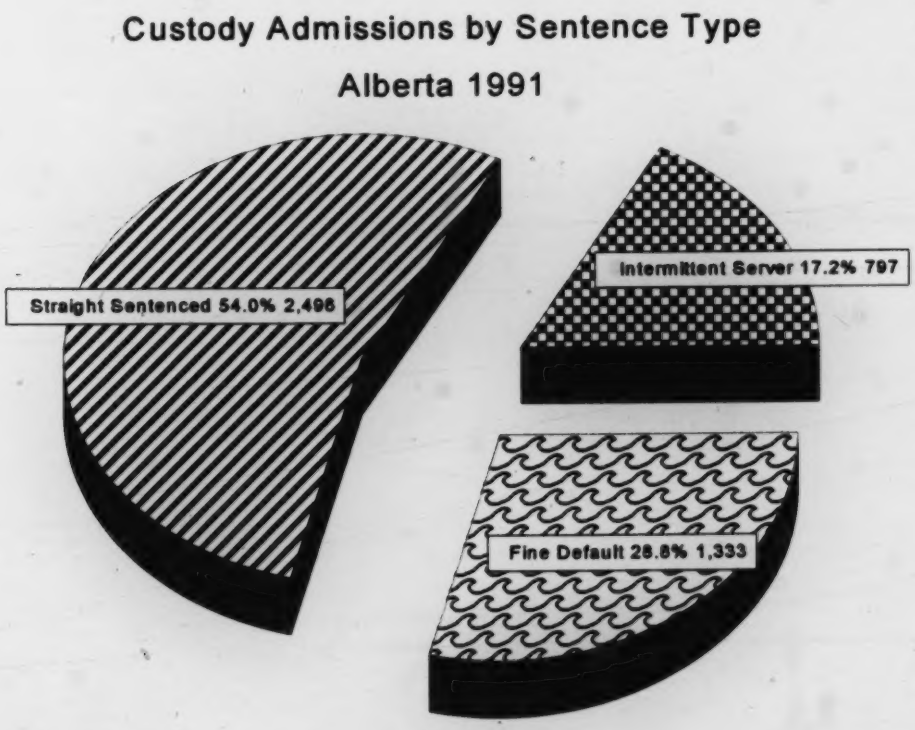
The existence of a sentence length threshold has theoretical implications for deterrence theory principles and policy implications for the use of custody. From a theoretical perspective, the concept of severity may have to be better specified to recognize the implications of thresholds for theory testing. For policy-makers, improvements in specific deterrence of offenders by increasing sentence length may only be achieved if meaningful increases (e.g., from thirty days to six months) rather than incremental ones (e.g., thirty days to sixty days) are imposed on offenders. A high sentence length threshold limits the usefulness of increasing sentence length, as the cost of increased jail capacity may be prohibitive.

2.2.2 Fine Default and Intermittent Sentences

Fine default and intermittent weekend jail terms are two additional means of discouraging repeat DUI. These case types make up a considerable portion of custodial admissions, yet the deterrent effect of type of custody disposition has received little attention among researchers. In 1991 (Graph 2.1), among the 4,626 impaired driving sentenced admissions to Alberta's provincial correctional facilities, fine defaulters constituted 29% (1,333), intermittent sentences 17% (797) and straight sentenced 54%

(2,496). Some investigators recommend an increased use of financial penalties to deter impaired driving (Ross 1992), on the basis of general deterrence. The increased use of intermittent sentences was one of the thrusts of Bill C-18, passed in 1985 in Canada, again for deterrence purposes. To date, evaluations of Bill C-18 have been general in nature (Moyer 1992) and have not assessed the deterrent effect of intermittent sentences.

Fines and weekend sentences are often not as certain, severe or swift as straight custodial sentences. Fine defaulters are usually provided time to pay, and apprehension by the police on an outstanding default warrant may be relatively unlikely. Intermittent servers are generally provided a few days after being sentenced prior to attending a jail on the weekend. Interest groups (PAID/REID 1992) and some government jurisdictions have felt that these measures are not severe enough to either specifically or generally deter



Graph 2.1 *Source:* Alberta Correctional Services

drunk drivers. Examples of jurisdictions using more punitive social control measures include Prince Edward Island (Birkenmeyer 1994) and Arizona (Ross, McCleary and LaFree 1990), where first time offenders receive mandatory short, sharp jail sentences. It is unlikely that these measures have had the desired deterrent effect. While there has been no evaluation of the PEI program, other research has found that mandatory jail terms for DUI often go unserved because of limited resources that must be directed towards predatory offenders (e.g., assault, theft) and those awaiting trial (Ross 1990; Ross and Voas 1989).

Generally, studies on specific deterrence have examined custody on an "either /or" basis, and have primarily been concerned with demonstrating the ineffectiveness of jail relative to other sanctions such as licence suspension or treatment. This focus has limited thorough testing of specific deterrence, and past research has failed to ask theoretically important questions. Research has also suffered from methodological problems. Proper control variables have been lacking, particularly prior criminal history, a variable that has been well documented in the literature as a significant predictor of impaired driving recidivism (Argeriou, McCarty, and Blacker 1985; Beerman, Smith, and Hall 1988; Gould and Gould 1992; Peck, Arstein-Kerslake, and Helander 1994).

Because they usually involve shorter (14-90 days) sentences, weekend sentences and fine default terms are judged to be less severe than most straight sentences. Given utilitarian assumptions of deterrence theory, intermittent sentences and fine defaults should not be as likely to deter repeat DUI. Intermittent servers also reside at their home residence during the week, thereby receiving a break from the effects of residing in jail, and further limiting deterrent effects. Fine defaulters are also more likely to have a less severe experience when in custody. In Alberta, they are automatically classified as minimum security and can be released from jail in short order, because they can work off their fine through institutional (in-house) fine option, receive a fine option temporary absence, or may be able to locate funds and pay their fine.

Conversely, intermittents and fine defaulters may have been sentenced appropriately by the courts because they present as less likely to reoffend. Analogous to the "tipping effect" of Tittle and Logan, judges may assess successfully the proper amount of deterrence required for less serious cases. My analysis will be all the more interesting since I introduce controls for employment, marital status and prior impaireds. All these factors are taken into account by the courts when assigning fines and intermittent sentences. However, in keeping with deterrence theory principles regarding severity, proposition two asserts that there will be higher recidivism for these less severe types of sentences.

Proposition 2: **Drunk drivers receiving intermittent and fine default sentences will be more likely to reoffend than offenders receiving more straight time (more severe) custodial sentences.**

2.2 Low Self-Control

In the 1980s a burgeoning research literature in criminology emerged on the so-called "problem behaviour syndrome." Empirical research found a consistent inter-correlation between deviant behaviours. Individuals involved in theft, for example, are also likely to be involved in illicit drug use, high risk driving, and drunk driving. This inter-correlation has been observed to be a long-term phenomena for youth and young adults, and has been described as a problem behaviour syndrome. This syndrome has been assumed to have its roots as an individual pathology. Three different explanations have developed using this concept: Jessor's problem behaviour theory (Jessor and Jessor 1977); Osgood et.al. (1988) and their generality of deviance theory; and Gottfredson and Hirschi's general theory of crime. These theories are particularly salient in helping explain drunk driving recidivism. If deviant behaviours are generally inter-correlated, then we would expect that those who persist in DUI behaviour would be involved in other types of crime such as theft, assault and fraud.

Originally, Jessor's problem behaviour theory was developed to explain adolescent delinquency. It identifies an underlying latent problem behaviour syndrome that leads to general delinquent behaviour. This condition arises from personality, environmental (family), and behavioural (involvement with delinquent others) influences. This explanation has been used in attempts to explain youthful drunk driving, and recently was utilized as a general framework to review the psycho-social characteristics of drunk drivers (Jonah 1990). Problem behaviour theory assumes that different deviant behaviours (drug use, problem drinking, bad driving, crime) are associated with a lack of value placed on conventional, middle class achievements. It further specifies that parental influence and delinquent peers will affect the likelihood of delinquent behaviour, such as drunk driving.

Building on the work of Jessor, Osgood and his colleagues (1988) developed what they label as the "generality of deviance" theory. Fundamentally, this explanation simply asserts that different kinds of criminal behaviours are correlated, and that past involvement in delinquent activities will lead to future delinquency. It shares with problem behaviour theory assumptions that different deviant behaviours are related through a common cause or influence. The generality of deviance theory, however, is not presented as a general explanation of all crime. Rather, the authors view their theory as a means to account for the underlying trait that the inter-correlation of deviant behaviours indicates, and suggest that their framework be used in tandem with other criminological theories to explain the onset of deviant behaviour. Furthermore, they view the generality of deviance framework as a useful means to examine the criminal career of offenders, perhaps allowing for the study of how some deviant behaviours may be age-graded. Although somewhat modest in its claims, the generality of deviance theory seeks to deal theoretically with an age old maxim in criminological prediction: the best predictor of future deviance is past deviance.

A more fully elaborated general deviance explanation was developed by Gottfredson and Hirschi (1990). Their general theory of crime posits that individuals with low self-control will commit criminal and analogous deviant acts. This would of

course include impaired and high risk driving, collisions, smoking, gambling and drug use. According to these authors, low self-control is composed of traits such as impulsiveness, self-centredness, seeking of immediate gratification, short sightedness (lack of follow through), risk-taking and aggressiveness. Presumably, any or all of these personal characteristics are sufficient conditions for the occurrence of deviant behaviours. The effects of low self-control are related to age and gender, with younger males being the most prone to crime because they have less self-control. Like deterrence theory, low self-control theory also assumes that the motivation for crime is non-problematic. Individuals are assumed to be pleasure seekers. Given the opportunity (necessary condition) and the absence of internal self-control established early in life through proper parenting practices, deviance results. Low self-control is a life-long personal "affliction" which declines, but does not disappear with age. This syndrome may be expressed and reinforced through unstable family and peer relationships, as well as job instability.

Problem behaviour, generality of deviance and low self-control theories all share the common assumption of an underlying individual trait leading to deviant behaviours. However, problem behaviour theory and the generality of deviance theory both also identify other potential factors as salient to deviant behaviour. Problem behaviour theory views parent and peer influence as potential factors impacting an individual's involvement in delinquency. As mentioned, proponents of the generality of deviance theory view their theory as being profitably integrated into models using other criminological explanations such as strain (stress from goal blockage), differential association (association with negative others) and the social bond (positive parental influence, commitment and involvement in conventional activities, belief in lawful behaviour).

Gottfredson and Hirschi pointedly reject both problem behaviour and general deviance explanations which partially attribute deviance to forces external to the individual. They also reject the potential integration of other theories with low self-control to more fully explain crime. They are explicit in identifying a single common

influence on criminal behaviour: a lack of self control. Crimes are not attributable to perpetrators' personality measures, parental or peer influence or individual strain, nor will these theories add to our ability to understand crime. Crimes or related acts are mostly simple, easy tasks that require little skill (e.g., smoking cigarettes or doing drugs, stealing cars, shop-lifting, fighting, driving drunk). A link between personal strain and crime simply reflects that low self-control offenders experience strain because they have short time horizons and do not plan for the future, and lack the self-discipline to keep a job. Together, these traits create stressful situations. If delinquent individuals associate together, then the authors argue that it is because they have like interests. They may also join together to increase the odds of successfully committing a crime, such as robbery. Parents allegedly cannot influence their children once the trait of low self-control has developed, and lack of commitment, involvement, and belief in the conventional world will ensue due to individual lack of self-control.

Low self-control theory was developed by the authors through the study of criminal offences, which were found mostly to be impulsive acts that involved minimal planning and achieved small gains. This behaviour is in stark contrast to the calculating, rational actor implied by deterrence theory. Impaired driving appears to satisfy the impulsive and pleasure seeking assumptions of low self-control. Usually, drinking is assumed to be a pleasurable activity (at least in the short term) and impaired driving does not appear to be well planned, aside from minimal use of back roads to avoid police and possible checkstops. The gain of driving home drunk (convenience versus the cost of public transportation or a taxi) seems small when penalties are considered such as stiff fines, loss of licence and jail. Recidivism is a natural consequence of low self-control, because of an inability by offenders to learn from past errors and their consequences. Gottfredson and Hirschi dismiss crime control strategies of deterrence and rehabilitation on these grounds, arguing that only aging can "cure" or reduce low self-control and involvement in crime and analogous behaviours such as impaired driving.

Low self-control individuals are expected to be more likely to commit criminal and analogous acts such as impaired driving. The effects of low self-control are thought to decline with age. Those involved with prior drunk driving, analogous acts (such as predatory crimes of theft, assault, fraud) and drink more alcohol (pleasure seekers) will be more likely to drink and drive again. DUI repeaters will tend to be younger than non-recidivists.

Proposition 3: **Drunk drivers with greater low self-control (more prior DUI's, involvement in analogous acts, consume more alcohol) will be more likely to recidivate.**

Proposition 4: **Individuals will be less likely to drink and drive as they get older.**

Individuals with low self-control are assumed to seek pleasure without thought to consequences, and become involved in pleasure seeking deviant behaviours such as alcohol consumption. Thus, individuals with low self-control will be likely to consume more alcohol, increasing the likelihood of driving drunk, and indirectly affecting the likelihood of drunk driving recidivism.

Proposition 5: **Individuals with low self-control (prior DUI, analagous acts) will be more likely to drink excessively, leading to a greater likelihood of drunk driving (indirect effect).**

2.2.1 Previous Empirical Research Related to the General Theory of Crime

In the only direct test of Gottfredson and Hirschi's theory on drunk driving, Keane, Maxim and Teevan (1993) analyzed data from an Ontario roadside survey of 11,117 night time drivers. They found that individuals who were classified as "low self-control" were more likely to drive with a high blood alcohol concentration (.20, well over the legal limit

of .08). Low self-control was indicated by estimates of risk-taking: not wearing seat belts, low perceived estimation of the probability of impaired drivers being stopped. An indicator of impulsivity assessed whether or not anyone had tried to deter respondents from driving. Seeking of immediate pleasures was indicated by drinking behaviour in the last week. Age was found inversely related to BAC level, with the paradoxical exception of the very young (16-24). The authors did not find gender significant to impaired driving, a finding contrary to the general theory of crime. This observation, however is consistent with much of the recent impaired driving literature dealing with recidivists (Yu, Essex and Williford 1992; Beerman et. al. 1988).

Keane and his colleagues have been criticized for using tautological behavioural measures of low self-control (Akers 1994). Whether or not one is wearing seat-belts, as well as indicators such as recent drinking behaviour, should be classified as outcomes rather than indicators of low self-control. Other critics have argued that low self-control is tested better by self-report survey instruments that can more specifically measure constructs of self-control (Gramsick et. al. 1993). Gottfredson and Hirschi (1993) have responded to their critics by expressing a strong preference for objective behavioural indicators. Their rebuttal argues that indices administered through questionnaire or interview methods run the risk of being unable to distinguish what people say from what they actually do. Besides, to confound matters, an outcome of low self-control is the likelihood of providing inaccurate self-reports (Hindelang, Hirschi and Weis 1981). Gottfredson and Hirschi also contend that criminal and analogous acts are the best indicators of the low self-control trait. Although their theory has not been tested directly, an abundance of indirect support exists for a relationship between impaired driving recidivism and the commission of other crimes (Argeriou et. al. 1985; Beerman et. al. 1988; Gould and Gould 1992; Jonah 1990; Peck et. al. 1994).

Related research has examined problem behaviour theory, although the complexity of the variables makes investigations difficult to integrate with empirical research (Jonah

1990). In his review of the impaired driving literature related to problem behaviour theory, Jonah was unable to identify a single well designed study that integrated problem behaviour theory across all three dimensions of personality, environment, and behaviour. He found considerable evidence, however, of a relationship between drunk driving and analogous behaviours, (bad driving, problem drinking, other drug taking, smoking, and other crimes) and traits of low self-control (risk-taking, thrill-seeking, and impulsivity). He found few studies that supported the influence of social environment (e.g., parents and peers).

Gould and Gould (1992) utilized Osgood et. al.'s generality of deviance theory as a partial explanation of drunk driving recidivism. They tested the hypothesis that repeat drunk drivers were more likely to have been involved in other deviant behaviours by comparison of first and multiple DUI conviction offenders. They demonstrated that recidivists were more likely to have convictions for other criminal offences and have higher blood alcohol concentrations. This pattern was taken to indicate lower self-control. The authors also managed to show differences between the two DUI populations in deviant behaviours, such as the likelihood of being involved in collisions. The authors' investigation focussed on the inter-correlation between deviant behaviours, but did not attempt to integrate any other criminological theories in examining recidivism. They did not examine low self-control, or any feature of the general theory of crime, save the concept of analogous acts.

Low self-control theory has been criticized for its potential lack of utility for the justice system and for its tautological measures. The "versatility construct" and rejection of crime specialization specified by Gottfredson and Hirschi makes it difficult to accurately predict more serious types of crime, rendering the theory of questionable usefulness (Akers 1991; Barlow 1991). The catch-all "analogous acts" as a behavioural "outcome" measure of low self-control is not helpful in explanation beyond asserting the simple perpetuation of behaviours. Because the authors eschew the psychological notion of

"conscience" and other personality measures of low self-control, their theory relies on the elements of criminal acts (most crimes are simple, provide quick gratification but generally small rewards and involve risk taking) to determine individual characteristics of low self-control. Relying only on crimes or analogous acts to identify low self-control leads to the somewhat simple circular argument that "past low self-control" causes "future low self-control".

Is criminal behaviour truly unsophisticated pleasure seeking, are there no elements of rationalism? Surely, corporate crime, white collar frauds and on-going organized crime activities require some degree of careful planning and coordination. The intelligence required to organize and maintain the operation activities is inconsistent with the "live for the moment" trait of low self-control (Akers 1994; Barlow 1991). Yet Gottfredson and Hirschi counter with research suggesting that at least some white collar criminals lack self-control, and other studies that suggest "organized" crime is actually not very organized, likely because its members do not have the skills to develop strong organizations.

Low self-control theory makes rather grand claims, making its assessment an important enterprise. My dissertation will provide a good test of the low self-control explanation of crime, because we will use the indicators favoured by the authors (analogous acts, pleasure seeking, age). Drunk driving is a behaviour that clearly falls under the category of acts analogous to more traditional crimes such as theft, assault, or fraud. If offenders are simply pleasure seekers and are not acting rationally, the general crime theory will help us explain why interventions such as deterrence or treatment may not be effective. Identifying low self-control cases may help us distinguish impaired drivers who are less likely to respond to social interventions (Keane, Maxim and Teevan 1993; Nochajski et. al. 1993). Examining the general theory in a model with strain theory indicators will allow us to also test assumptions that low self-control offenders are more susceptible to stress (low frustration tolerance).

2.3 Strain Theory

Strain theory was developed as a macro-level sociological theory (Merton 1938) to explain deviant adaptations to pressure brought about by the disjuncture between culturally ascribed goals and available legitimate institutional means to achieve them. Merton's anomie theory has been utilized to explain property crime as an innovative adaptation by the lower socioeconomic class, who are restricted from access to legitimate means to attain financial success because of their position in the social structure. Merton's theory also has been used to explain alcohol and drug addiction as a retreatist adaptation by individuals who reject both cultural goals and means by "dropping out" of society.

At the individual level, Robert Agnew (1992) defines strain as resulting from negative relations with others. The pressure for deviance comes when individuals perceive that they are: 1. blocked from achieving their goal; 2. presented with the threat of taking away positive stimuli, or; 3. presented with noxious or threatening stimuli. Individuals can be predisposed to deviance by prior life experiences, and criminal or deviant behaviour may result from a cumulation of stressful life events and be triggered by stress or situational life event(s). Stress may result in an individual becoming chemically dependent (blocked from achieving goal, escape from negative stimuli) and involved in drinking and driving. The effects of life events and stress can be mediated by social support. An unemployed high school dropout might not experience strain because he has few goals, his best friend also quit school, and his middle class parents let him live at home.

Agnew's theory recognizes the influence of social conditions upon stress. Individuals of lower socioeconomic status and those from disadvantaged groups (e.g., Aboriginals) may have a more difficult time minimizing strain because they lack resources. Sensitivity to strain may be influenced by involvement in a delinquent subculture. Individuals with more conventional social support (intact family and positive peers for adolescents, marital and social network for adults) may be more likely to manage stress successfully without resorting to deviant or maladaptive coping strategies. By extension,

Agnew's strain theory suggests that drunk drivers who subsequently experience a high degree of personal stress are more likely to repeat drunk driving.

Proposition 6: **Individuals who experience stress will be more likely to become involved in drunk driving recidivism.**

Avoidance of noxious stimuli (stress) may be relieved by becoming drunk, increasing the likelihood of impaired driving (Agnew 1992). Stressors may be chronic, such as social status or a physical handicap (resulting in blockage from achieving one's goal), and can also be assessed by perceptual measures of individual stress and life satisfaction. Effects of stress may be direct (stress results in repeat DUI) or indirect (stress results in excessive alcohol consumption which results in repeat DUI). Stress can result in impaired driving recidivism directly through relapse into a deviant coping response of drinking and driving to relieve stress-related tension (avoid negative stimuli). Stress can also indirectly affect impaired driving, as those who cope with stress by the deviant response of excessive drinking (seek pleasurable stimuli) are more likely to be drunk when they drive.

2.3.1 Health/Illness Stress Theory

There are several differences in emphasis between Agnew's strain theory and the "medical model" stress theory of Pearlin (1989) or Thoits (1995). Agnew focuses on adversity and negative relations with others in his development of stressors for strain theory. He concentrates particularly upon measuring the affective state of blame/anger, which he sees as a key precondition to crime. Agnew attributes this distinction to criminology's focus on the behavioural outcome of crime, while general stress theorists are more interested in individual outcome states such as depression or life satisfaction. Another important difference is Agnew's treatment of constraints to delinquent strain adaptations. Coping resources are a critical feature of stress theory, but Agnew dwells on deficiencies rather than assets. He limits his discussion of coping resources to individual

resources such as self-esteem, intelligence, and social support. At the macro-level, however, he places constraints within the context of adversarial relations. He cites the negative influence that low income neighbourhoods may have on an individual's ability to downplay the importance of money, or the effect adolescent status has on an individual's ability to avoid noxious stimuli from family or school.

Sociologists studying health and illness rarely focus less on adversarial relations or deviance (crime) as outcomes, and they take a broader view of coping resources. They tend to separate the stress process into three domains: stressors, stress mediators (coping and social support), and stress outcomes (Pearlin 1989; Thoits 1995). The sociological perspective on stress shares with other disciplines the study of interpersonal relationships and individual perceptions, but sociologists can be distinguished by their consideration of structural contexts such as social status and institutional roles. For example, rather than concentrating on singular, episodic stressors such as life events, sociologists also examine enduring chronic strains that can lead to stress. Stressors defined as chronic strains may be rooted in social roles (a "bad" marriage, unemployment), social status (low income, ethnic minority), or physical status (handicapped or chronic illness). Besides these structural factors, chronic stressors could include local ambient stressors, such as the fear raised by living in a crime prone neighbourhood or residing next to a noxious, fume-ridden industrial area.

Stressors often reflect an interconnected series of life circumstances and social situations, but explanatory models are not necessarily additive (Pearlin 1989). Often, individuals under substantial stress are not reacting to a single event or condition. Thus, interactions and multiplicative effects of stressors may be present when stress outcomes are severe. At times, life events and chronic strains may converge, such as when a spouse dies (life event) and a subject becomes a widower (chronic stressor).

Stress mediators are divided into categories of "coping" and "social support." Coping can be described as the actions people take to avoid, moderate, or resist the impact of stressors such as life events or chronic strains. Coping actions are often situation specific. Problems on the job may be coped with differently than problems in the home. Despite these distinctions, the functions of coping are similar from situation to situation. Coping can be seen as efforts to change a situation, manage its meaning or reduce its threat, or simply to contain the stress at a manageable level. Social support refers to the social resources an individual has available to manage stress (Thoits 1995). Resources may range from a single confidant to a network of friends and family. Institutional sources of support may include family, neighbourhood, religious associations, and the work place, as well as access to professional help and voluntary associations. Often, individual perceptions of social support are sought as measures. The inter-relationship of institutional sources, however, whether perceived or individual, still may bear on the effectiveness of social support as a mediator of stress.

In developing his concept of stress mediation, Pearlin criticizes previous sociological stress research for proceeding on the assumption that coping and social support are, by definition, effective mediators of stress. Coping may be ineffective. Drinking to relieve tension may be maladaptive and self-injurious, and even the receipt of social support from others may have unfavourable consequences. Coping mediators may represent harmful actions, such as excessive consumption of alcohol, involvement with delinquent or negative others, or remaining in an abusive relationship. Denial and withdrawl may leave real problems unaddressed and unsolved. Some mediating factors are more effective in some situations than others, or simply do not help much in managing stress. Pearlin argues that consideration of the indirect as well as direct effects of mediators is critical, given the inter-relation of stressors upon one another.

Manifestations of stress may include medical outcomes (immunological and endocrine), anxiety and depression, as well as a multitude of "social problems." Multiple

indicators of stress outcomes are preferable to single indicators, not only to adequately measure stressors and their effects, but also to ensure that alternative explanations are adequately addressed. For example, perceived stress may not explain impaired driving when coping behaviours and social support resources are introduced in an empirical model.

2.3.2 Strain/Stress, Addiction and Drunk Driving

No empirical impaired driving studies have attempted to directly test either Agnew's general strain theory, or the health/illness stress theory. Indirect support comes from studies of social status and drunk driving, and psychological studies testing stress-related addiction theories.

Equivocal results have been observed for the relationship between socioeconomic status and impaired driving. Wilson and Jonah (1985) found in a national Canadian self-report survey that impaired drivers were more likely to have a higher education and income than those who did not drink and drive. Contrary to these findings, an American study by Lund and Wolfe (1991) found a higher proportion of night-time, weekend drivers with a BAC over .10 among those unemployed and without a high school education. In addition, Moskowitz, Walker, and Gomberg (1979) found in their review of the literature that impaired drivers were more likely to be unemployed.

The relationship between unemployment and impaired driving is more consistent when examining recidivism (Beerman et al. 1988; Gould and Gould 1992; Peck et. al. 1994; Peck 1991; Pisani and O'Shea 1987). Unfortunately, the literature tends to focus on occupational status (i.e., blue collar worker) as an indicator of socioeconomic status. Blue collar workers may not drink excessively through deprivation per se, but from job stress and alienation (Ames and Janes 1987). Occupational status also cannot distinguish individuals who suffer from considerable hardship from those who might be identified as

part of the emerging urban underclass. This is a concern when attempting to measure the impact of socioeconomic status on deviance (Farnworth, Thorneberry and Krohn 1994).

The psychological literature has focussed on the role of stress in alcohol consumption and alcohol addiction. The most widely referenced theories are tension reduction, and extensions of tension reduction such as stress response dampening theory (Sher 1987; Sher and Levenson 1982). The tension reduction hypothesis presumes that alcohol reduces stress, and individuals drink as a means to that end. These theories postulate that stress is a determinant of drinking, but neither a necessary or sufficient one by itself. The use of alcohol to alleviate stress is mediated by social context, availability of alternative responses, and predisposition to alcoholism. Alcohol dependency and alcoholism would be determined as a maladaptive response to stress. Empirical support for this proposition has been inconsistent. Reviewers have recommended that in order to observe clear stress outcomes, tension reduction theory must utilize measures that capture high levels of stress, such as depression, fear, loneliness, boredom (Powers and Kutash 1987).

Veneziano, Veneziano and Fichter (1992) found that among a sample of 498 impaired drivers, life stressors distinguished the alcohol dependent sub-group from the general impaired driving group. Unfortunately, this relationship was not strong, and did not address the issue of impaired driving recidivism. Stress has also been found to impact the relapse of alcoholics (Brown et. al. 1995). In their study of alcoholic relapse, Brown et. al. (1995) concluded that social support attenuated the effects of stress. In a follow-up study of alcohol consumption patterns by 68 impaired driver recidivists in Alberta, MacIntyre (1990) found family and work supports related to effective coping with stress and lower alcohol dependency. In his analysis of Edmonton survey data, Adebayo (1991) observed that individuals who met more frequently with friends were less likely to drink and drive.

In summary, the literature indicates some potential for strain/stress theory to help account for drunk driving recidivism. Prior research suggests at least a moderate relationship between strain/stress and addiction, and the importance of coping responses and social support as potential mediators of stressors.

Proposition 7: **Impaired drivers with better coping resources will be less likely to drink and drive, because these resources will reduce stress or enhance individual management of stress.**

Individuals with more coping resources (e.g., employed, more educated, maturity, social support such as marriage) will be less likely to experience stress, and if they experience stress, will be more likely to manage it effectively (an interaction effect). For example, social support has been reported to be inversely related to alcohol abuse amongst impaired drivers (MacIntyre 1991), while people with better social support generally drink and drive less (Adebayo 1991).

2.3.3. Aboriginal Social Status and Drunk Driving

Minority status per se has been conceptualized as a chronic stressor, embedded in a disadvantageous social position. Higher levels of alcohol consumption among Black and Hispanic Americans and North American Aboriginals also has been attributed to the stress resulting from institutionalized discrimination. Aboriginals may drink and drive in part due to the chronic stress of discrimination, colonialization, and domination by the white culture. Relating these structural obstacles to Merton's notion of anomie, researchers have postulated that ethnic minorities are more likely to face economic deprivation and alienation from mainstream culture, resulting in excessive drinking as a maladaptive "escape"(Heath 1988; May 1982). Structural theories have explained excessive drinking as arising from the experience of institutionalized poverty and deprivation experienced by Canada's Aboriginal peoples (Havemann, Couse, Foster and Matonovich 1985). In a

fashion analogous to Merton's retreatist adaptation and Agnew's escape from noxious stimuli, Aboriginal people may engage in problem drinking to escape from the problems of everyday life.

Proposition 8: **Aboriginals will be more likely to drink and drive again than non-Aboriginals.**

Overall, the research literature indicates that disadvantaged minorities tend to drink and drive at a higher rate than the dominant white population (Lund and Wolfe 1991). Aboriginal status can be conceptualized as a chronic strain that will result in a lesser ability to manage stress and avoid drunk driving, excessive alcohol consumption, or both.

Proposition 9: **The effects of stress will be greater for Aboriginals because they have fewer social resources, resulting in more drinking and driving recidivism (interaction effect).**

The difficult social circumstances confronting Aboriginals in Alberta may result in stressors having multiplicative effects (Pearlin 1989). From a stress perspective, Aboriginal social status may have a direct effect on strain as a chronic stressor, and it may have an indirect effect because the impact of social conditions on Aboriginals differs from that experienced by non-Aboriginals. For example, unemployment or low education may impact Aboriginals more severely even though these conditions are in one sense "normal" for some Aboriginal communities. Given the proportionately much higher unemployment rate amongst Canada's Aboriginal peoples, they do not have the social networks and supports that non-Aboriginals are able to draw upon.

Very little research exists on Aboriginals and impaired driving. Using official statistics, Weinrath and Gartrell (1995) found Aboriginals to be over-represented in a random sample of Alberta problem drivers (12% of all bad drivers, compared to

approximately 5% in the adult Alberta population). Black and Hispanic drivers are generally over-represented in American official impaired driving statistics, but tend to be under-represented in self-report surveys of impaired driving (Ross, Howard, Ganikos and Taylor 1991). Self-report surveys may be biassed by social desirability. Ross and his colleagues also note a tendency for minority youth to drink and drive less than white youth, which may be related to socioeconomic status (ability to afford a car). Recent surveys, however, have shown differences between ethnic groups in impaired driving rates. In their survey of American impaired driving using roadside tests of blood alcohol concentration, Lund and Wolfe (1991) found drivers with BAC's over .10 as follows: White (2.7%), Black (5.9%) and Hispanic (4.4%). Blacks and Hispanics were both almost twice as likely as Whites to drink and drive.

In his review of the epidemiological literature on alcohol abuse amongst American and Canadian Aboriginals, Philip May (1994) argues that the stereotype of the "drunken Indian" tends to ignore the wide discrepancies between Indian communities in their drinking behaviours, particularly in their rates of alcoholism. Many reserves place a high value on abstinence and have lower rates of alcohol consumption than surrounding white communities. May also observed that Aboriginals tend to have higher rates of abstainers than whites in their communities, particularly at middle age.

In summary, evidence concerning elevated rates of problem drinking and alcoholism amongst minority groups is mixed. The evidence may well be somewhat over-stated, perhaps because the prevalence of alcohol problems varies considerably across communities. In the case of Aboriginal Canadians, it is difficult to generalize, given the dearth of impaired driving research.

2.5.4 Treatment Programs as a Coping Mediator

Treatment programs are an obvious coping resource for those who drink excessively and sometimes drive afterwards, and for those who drink and drive as part of a

response to environment or chronic stress. Increased treatment of one type or another is often recommended by interest groups to reduce impaired driving recidivism (Mann, Vingilis and Stewart 1988; Mann, Leigh, Vingilis, and De Genova 1983; Nichols, Ellingstad, and Reis 1980; Well-Parker et. al. 1995). In a recent meta-analysis, Parker and her colleagues concluded that education and treatment programs did decrease recidivism on average an additional 8-9%, compared to other interventions such as licence suspension or no treatment at all. The meta-analysis included 194 studies that the researchers deemed of suitable methodological quality, including features such as control or comparison groups, adequate sample size and control for alternative explanations. Despite some methodological weaknesses in the studies reviewed, the conclusion of this meta-analysis provide evidence to support the efficacy of alcohol treatment programs for drunk driving.

Proposition 10: **Impaired drivers who receive lengthier treatment will be less likely to recidivate.**

Again, for heuristic purposes, the proposition above is expressed in a manner consistent with social and agency beliefs, even though the proposition is not strongly supported by the extant research. Parker and her colleagues' meta-analysis was unable to answer several questions that plague the treatment literature. Lengthier treatment was found to have inconsistent effects, but multiple interventions were found to be more effective than single interventions (e.g., education, counselling, and follow-up probation). What exactly worked and for whom it worked was not clearly resolved. Middle risk DUI cases appeared to benefit more from treatment than low risk or high risk cases. Results, however, were confounded by selection factors, since middle risk cases were the most likely to receive treatment, through differential assignment by professionals and refusal by high risk cases to undertake or complete programs.

Treatment programs may not exert stronger and more consistent effects on repeat DUI behaviour because they fail to address the source of more severe alcohol problems of drunk driving recidivists. About 30-50% of impaired drivers are estimated to be alcoholics and a sizable proportion of the remainder are problem drinkers (Vingilis 1983). Simple informational programs are woefully inadequate to address these serious problem drinkers. Yet in most American states and Canada, very simple, superficial, brief programs make up the bulk of initial interventions (Ross 1992; TIRF 1994). It has been advocated that treatment programs for DUI recidivists be intensive, residential, and of lengthy duration (months), rather than a single day or a few evenings.

The heterogeneity of the impaired driver group complicates the design of specific programs. Drunk drivers as a group vary widely demographically, in their legal experiences, in severity of addiction and in numerous personality factors (Argeriou et. al. 1985, Beerman et al 1988; Donovan et. al. 1985; Donovan, Marlatt, and Saltzman 1983; Saltstone 1989; Wells-Parker, Landrum, and Topping 1990; Vingilis 1983; Wilson 1991). Both first offence and impaired driving recidivists are predominately younger males, and both types of offenders include a disproportionate number of ethnic minorities such as Blacks and Hispanics in the U.S. (Ross at. al. 1991) and Aboriginals in Canada (Weinrath and Gartrell 1995). In addition, they are more likely to have blue collar or working class occupations. Not all impaired drivers, particularly first or second offenders, are necessarily problem drinkers. Drinking is simply too widespread in Canadian and American society, and it is relatively easy to blow .08 for most people who have been drinking socially. Besides, the risk of detection is so as to make arrest improbable. However, recidivists particularly are more likely than the general population to be problem drinkers or alcoholics. They are also likely to have committed other high-risk driving offences such as dangerous driving, and have been involved in other criminal offences such as assault or theft (Peck et. al. 1994).

More importantly, research on the effects of treatment programs points to the need to examine impaired driving recidivism in a broader theoretical context. Researchers have not empirically examined the social conditions and personal circumstances under which programs may effective. Covariates have not been linked to theoretically relevant explanations in any systematic manner and rarely are interaction effects between offender characteristics and program considered. These strategies are critical to a better understanding of any effect which might be observed for rehabilitation programs, net of other DUI sanctions, and characteristics of the impaired driver. Alternatively, if treatment has little systematic effect, or if some sub-populations do not appear to benefit from special intervention, then treatment programs could be adjusted to minimize intrusiveness, or to make greater use of other specific deterrence programs such as fines.

2.4 Derivative Propositions

Explanations of drunk driving recidivism would benefit from an exploration of the many possible sources of explanation reviewed above, particularly among deterrence, low self-control, and strain/stress theories. The effects of individual characteristics and social situations advanced by one theory may well be conditioned by factors proposed by another. For example, individuals who possess relatively high self-control may react differently to deterrent punishments or stressors. This reasoning leads to a number of speculative additional propositions.

Proposition 11: **Impaired drivers with low self-control will be more likely to recidivate regardless of the amount of deterrence they experience (interaction effect). Deterrence will be more effective for those with high self-control.**

The general theory of crime has implications for explaining continued drunk driving recidivism in the face of specific deterrence and coping resources such as treatment (Gould and Gould 1992; Keane, Maxim and Teevan 1993). As noted above, studies

examining lengthy jail sentences have found little specific deterrent effects on the probability of reoffence. Such results may be attributable, according to the general theory of crime, to the large number of low self-control offenders included in the incarcerated drunk driving group. This reasoning also leads to a parallel proposition concerning the outcome of treatment.

Proposition 12: **Impaired drivers with low self-control will recidivate m[illegible] regardless of the amount or type of treatment they [illegible]d treatment will be more effective for those with high se[illegible]ntrol (interaction effect).**

Gould and Gould (1992) have suggested that multiple DUI offenders share the attributes of career criminals (Blumstein, Cohen and Farrington 1988), and were likely resistant to treatment. Empirical support for this argument was provided through an evaluation of a twelve week alcoholism treatment program. Nochajski, Miller, Wieczorek and Whitney (1993) found that participants with a criminal record were less likely to benefit from treatment, as indicated by outcome measures of DUI rearrest and self-reported drinking, and similar findings were also reported by Peck and his colleagues (1994).

Proposition 13: **Impaired drivers with low self-control who experience stress will be more likely to recidivate. High self-control will mediate the effects of stress, reducing the likelihood of repeat DUI.**

One of the elements of low self-control is low frustration tolerance, or an inability to manage stress. It would be anticipated then, that stress would have a much larger recidivism effect on low self-control impaired drivers. Self-control may moderate the effects of stress on maladaptive coping responses (DUI recidivism).

2.5 SUMMARY OF PROPOSITIONS

Proposition 1: Impaired drivers who receive longer sentences will be less likely to recidivate than those who do not. 13

Proposition 2: Drunk drivers receiving intermittent and fine default sentences will be more likely to reoffend than offenders receiving more straight time (more severe) custodial sentences. 17

Proposition 3: Drunk drivers with greater low self-control (more prior DUI's, involvement in analogous acts, consume more alcohol) will be more likely to recidivate. 21

Proposition 4: Individuals will be less likely to drink and drive as they get older. 21

Proposition 5: Individuals with low self-control (prior DUI, analogous acts) will be more likely to drink excessively, leading to a greater likelihood of drunk driving (indirect effect). 18

Proposition 6: Individuals who experience stress will be more likely to become involved in drunk driving recidivism. 26

Proposition 7: Impaired drivers with better coping resources will be less likely to drink and drive, because these resources will reduce stress or enhance individual management of stress. 31

Proposition 8: Aboriginals will be more likely to drink and drive again than non-Aboriginals. 32

Proposition 9: The effects of stress will be greater for Aboriginals because they have fewer social resources, resulting in more drinking and driving recidivism (interaction effect). 32

Proposition 10: Impaired drivers who receive lengthier treatment will be less likely to recidivate. 34

Proposition 11: Impaired drivers with low self-control will be more likely to recidivate regardless of the amount of deterrence they

experience (interaction effect). Deterrence will be more effective for those with high self-control. 36

Proposition 12: Impaired drivers with low self-control will recidivate more regardless of the amount or type of treatment they receive, and treatment will be more effective for those with high self-control (interaction effect). 37

Proposition 13: Impaired drivers with low self-control who experience stress will be more likely to recidivate. High self-control will mediate the effects of stress, reducing the likelihood of repeat DUI. . . 37

2.6 Modelling the Effects of Deterrence, Low Self-control and Strain/stress Explanations of Impaired Driving Recidivism

In summary, the use of deterrence, low self-control and strain/stress theories to explain repeat DUI can be expressed through two heuristic models. In the first model, the effects of specific deterrence, low self-control and strain/stress are presented to show their direct effects on the incidence of drunk driving reoffence (Figure 1). I hypothesize that increases in specific deterrence (e.g., longer custody sentences, straight sentence vs. fine default or intermittent server) decrease the likelihood of DUI recidivism. Offenders with less self-control (i.e., involved in analogous acts, younger) will recidivate more. Impaired drivers who experience stress (Aboriginal social status, unemployed, less educated) will relapse more often into drinking and driving, unless greater coping resources are available (social support, more treatment programs). Coping resources might also "buffer" the effects of stress. Low self-control may influence the effects of stress, treatment and deterrence on recidivism.

(Place Figure 1 about here)

The second explanatory model specifies the intervening effect of drinking, and again designates a direct effect for deterrence, low self-control and strain/stress theories. Stress has a direct effect on alcohol consumption (e.g., more stress means more alcohol

abuse), which in turn directly increases the likelihood of DUI recidivism. The relationship between stress and alcohol consumption is reasonably well-established in the literature, while problem drinking and repeat DUI has shown a moderate relationship.

(Place Figure 2 about here)

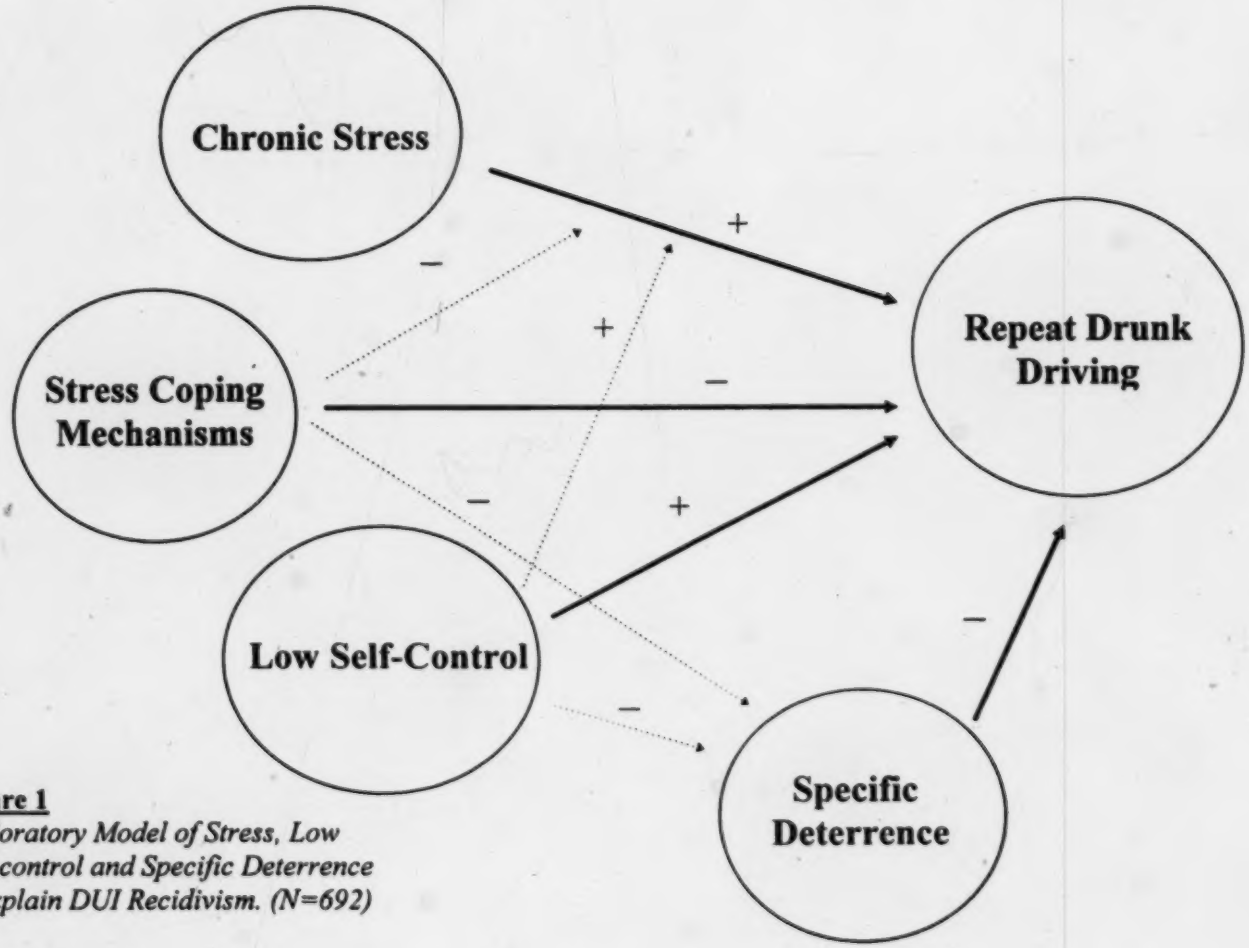


Figure 1
Exploratory Model of Stress, Low Self-control and Specific Deterrence to explain DUI Recidivism. (N=692)

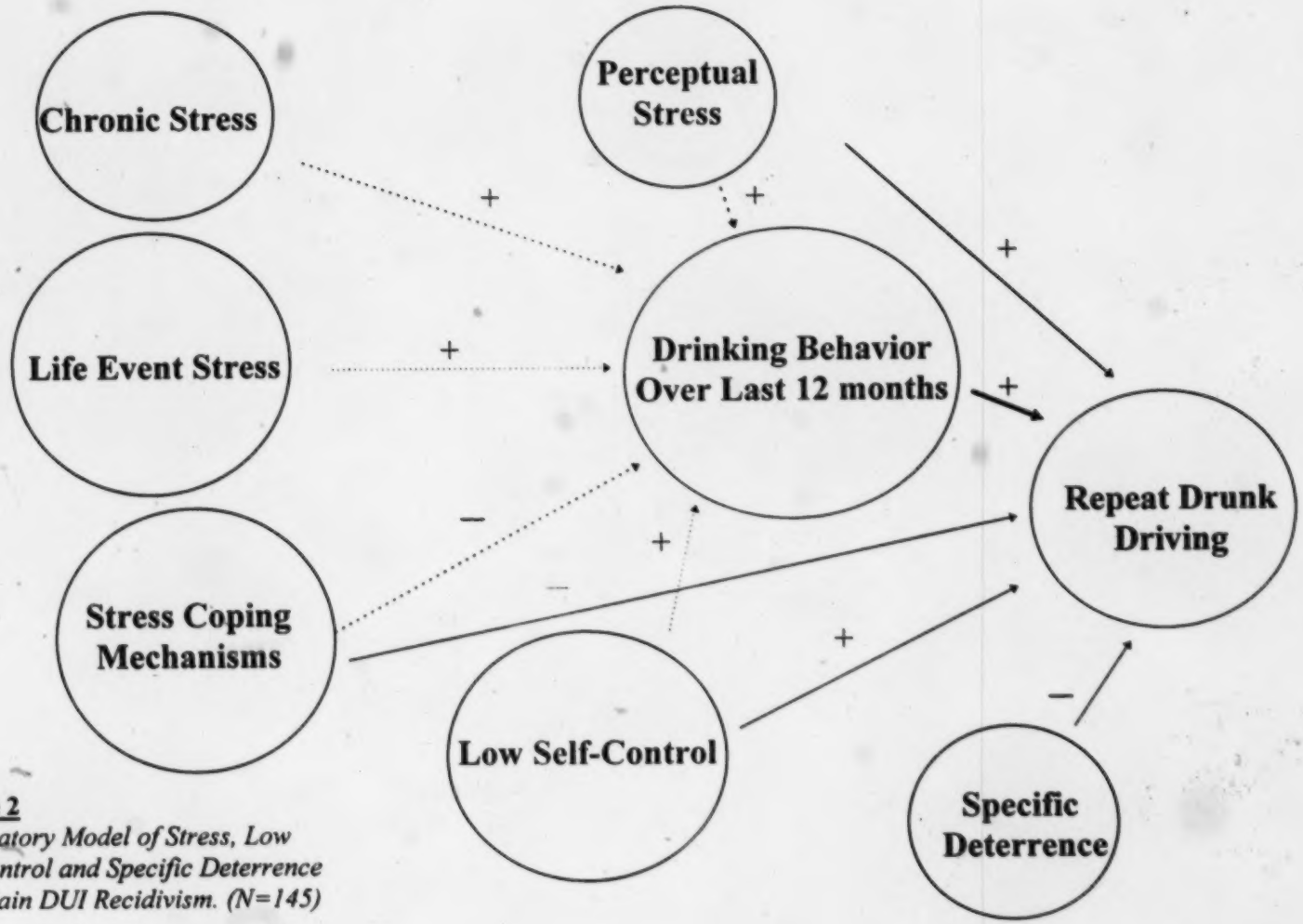


Figure 2
Exploratory Model of Stress, Low Self-control and Specific Deterrence to explain DUI Recidivism. (N=145)

CHAPTER 3 METHODS

3.1 Data Set

An examination of many of these hypotheses can be conducted using available secondary data from an impaired driving program evaluation. I originally collected this secondary records data in an evaluation of the Alsike Impaired Drivers program conducted for People Against Impaired Driving and Alberta Justice, from May 1993 to June 1994. The first phase of the study was a retrospective collection of official records for 692 impaired drivers who had been housed in provincial custody. It linked records from provincial corrections and motor-vehicle data bases, as well as inmate files. These 692 subjects were subsequently followed up for 24-45 months after program attendance to check drunk driving recidivism (new DUI conviction). The second phase of data collection consisted of 145 interviews, conducted with a subsample of the 692 impaired driving cases. The follow-up survey gathered information from respondents concerning their current life circumstances, (self-reported) drunk driving and alcohol consumption for the 12 months prior to the interview.

A number of difficulties are associated with the use of secondary data sets. Sometimes, a lack of familiarity with the original study design and its potential data problems may lead an investigator to conduct an analysis based on misguided assumptions concerning data quality. In other cases, available indicators may be too poorly measured to "match" (be isomorphic with) nominal concepts.

The evaluation data set, however, used in my investigation of drunk driving persistence offered several features that helped diminish potential theoretical and methodological concerns. First, I was the primary investigator in the original evaluation, giving me an extensive qualitative knowledge of the data set. I completed the research design, developed and pretested the data collection instruments, supervised data collection, created the informed consent release, and trained interviewers. Secondly, the

program evaluation was concerned with drunk driving recidivism and post-program community adjustment, two critical areas examined in the dissertation. The program evaluation recidivism measures were developed from a literature review, which resulted in the collection of many different possible indicators as well as important control variables. Consequently, the evaluation data provides a number of empirical indicators with which to test my three theories of specific deterrence, low self-control, and strain/stress. The data also allows drunk driving recidivism to be examined through both official records and self-report, improving the reliability and validity of findings through analysis of multiple outcome measures.

Reliability and validity concerns often associated with official records presented a potential concern with the evaluation data set, since it is based to a large degree on criminal justice and motor vehicle agency records. Several formal and informal justice system processes, however, helped enhance the data quality of impaired driving official records used for the evaluation. Formal agency policies dictate that criminal justice and motor vehicle data bases must be concerned with the proper legal recording of drunk driving and criminal offences, which are a central focus of my investigation. Informally, government staff must place a strong emphasis on maintaining legal records, because precise records are needed for day to day tasks within the justice and motor vehicle systems. Serious consequences exist for error. Crafting proper sentences in court, establishing proper length of licence suspensions, assigning a security classification upon admission to custody, and establishing a prison treatment and release plan are all operations that require carefully kept records on prior convictions and recidivism. Recording errors can negatively affect individual performance evaluation and impact credibility with other agencies (police, courts, corrections, motor vehicles). Mistakes are also brought to the attention of staff by offenders themselves, who may suffer the consequences of poorly kept legal records.

The reliability and validity of official records data capturing both demographic and legal information was improved by the linkage of different record sources. Research staff were able to access and cross-check data from the provincial corrections' Computer Offender Management Information System (CoMIS), its Temporary Absence Case Management Screen, and inmate files. Impaired driving and some demographic data were also cross-checked against the provincial motor vehicles automated computer system (MOVES).

3.2 Sampling

3.2.1 Retrospective Phase -- Official Records

The program evaluation's total sample of 692 drunk drivers was made up of 288 inmates who attended the Alsike correctional camp impaired driving program, a comparison group of 226 inmates who attended other impaired driving and addictions programs, 92 fine defaulters and 86 intermittent (week-end) servers. The four subgroups served custody terms of varying length. They constitute a representative sample of high to moderate risk Alberta impaired drivers, suitable for a drunk driving recidivism study. Most of those in the sample received substantial sentences, had been in custody a number of times before, and almost half had convictions for other criminal code offences. Serious addictions problems appeared to afflict many. The mean sentence length was 216.9 days (s= 209.4), prior custodial admissions averaged 5.5 (s= 4.9) and 45 percent had prior criminal convictions. Offenders averaged 2.5 prior DUI convictions (s=2.5) and 65 percent had received prior addictions treatment. The typical sample member was a white, young, single male, with grade 10 education, who was employed upon admission and lived with a significant other (married or not). About 65 percent were Caucasian, 34 percent were aboriginal and 1 percent were of other ethnic origin. The mean age was 33.6 years (s= 9.3), the average educational grade level achieved was 9.9 (s= 1.9), approximately 70% were reported being employed full or part-time prior to incarceration, and 46 percent were married or common-law.

The sampling frame for Alsike program participants was created from records for all inmates who had completed the program between October of 1989 and June of 1991. The evaluation study was unable to create a control group of offenders who did not take an addictions program because of the emphasis provincial motor vehicle and corrections agencies placed on impaired driving treatment. A comparison group of 300 impaired drivers sentenced to provincial custody in 1990 (but who had not attended the Alsike impaired driver's camp because it was full) were drawn through an automated randomization procedure available in SAS. There were 2,496 impaired drivers admitted to "straight" custody for impaired driving in 1990, but the sampling frame was quite probably smaller than this. Special restrictions were placed on SAS commands in the selection process to over-sample high-risk cases in an attempt to "match" the records of the Alsike sample. Background data already collected on Alsike cases led to stratification of a high risk comparison group by prior custody admissions and demographic attributes of age and ethnicity. The subsample of 300 was then reviewed manually by the evaluation research team, who removed inappropriate choices such as fine defaulters, females, and offenders found to have attended the impaired driver's camp. The final matched comparison group was 226. The two groups were not significantly different in demographic composition, drunk driving history or criminal records. The matching procedure was successful, since reported characteristics such as prior impaired driving and criminal history convictions could not be determined beforehand.

To increase insight into the management of impaired drivers in the correctional system, retrospective evaluation data was also collected for impaired drivers serving fine default and intermittent sentences in 1991. For each category, 100 cases were randomly selected using the SAS procedure. Through inappropriate classification the final subsamples were reduced slightly, to 86 intermittents (sampling frame N= 797) and 92 fine defaulters (sampling frame N= 1,333).

3.2.2 Interview Phase: Impaired Driver Self- Report

The primary sampling element for the interview study phase consisted of any case that was part of the 514 camp and comparison group offenders selected in the first phase of the evaluation. Efforts were made to contact all 514 individuals. The overall success rate was 28 percent (Table 3.1). The largest reason for non-response was "could not locate" (57%), indicative of the transiency of the impaired driver group and the limited resources of the investigator. As they were considered to be less serious offenders, fine default and intermittent cases were not interviewed.

A number of factors influenced the probability of a participant being interviewed. Offenders were located by accessing their most recent address through provincial motor vehicles and corrections records. Very few impaired drivers, however, had their licences reinstated, and their addresses were rarely up to-date. Often, the corrections records were no longer applicable. If required, next of kin or friends indicated on the Computerized Offender Management Information system (CoMIS) were contacted to inquire as to the whereabouts of program participants. In many cases these numbers were also no longer in service. Researchers tried to find a new number in all cases by calling directory assistance. Given that so many offenders could not be contacted due to their having moved and that often no new addresses or phone numbers were available, the sample group probably is more stable in residence than the average for the total sample of 514. A number of offenders were located through their active status in the corrections community or corrections sub-system, typically for offences unrelated to impaired driving. In summary, the interview sample group were likely to be less transient, and more likely to have committed new "other" crimes.

Response rates may have been influenced by reactivity. For example, the high overall program approval rating by respondents reported in the Alsike evaluation (Weinrath 1994) may have resulted from self-selection. Offenders who disliked their treatment regime may have refused interviews. The overall interview response rate for

those located was only fair (65%), with a refusal rate of 24.7% (Table 3.1). How high the "actual" refusal rate is dependent on the interpretation of "could not arrange suitable time", (9.9%) possibly a form of passive resistance.

Table 3.1 Response Rate for Impaired Driver Follow-Up Interviews

	Frequency	% total	% of those contacted
Could not be located	292	(57%)	
Could not arrange suitable time	22	(4%)	(9.9%)
Declined Interview	55	(11%)	(24.7%)
Interviewed	145	(28%)	(65%)
Total	514		

Several efforts were made to limit subject reactivity. First, I kept the length of the questionnaire to 20 minutes. At the beginning of the interview, subjects were informed of the time required. Secondly, subjects were assured of confidentiality. Third, the interview minimized intrusive questions. Fourth, the rationale for the interview, "we need and greatly desire your opinion on this program" was intended to motivate participation since respondents would have an interest in program outcome. Finally, open-ended questions were put at the front of the questionnaire to promote interest and comfort levels.

Despite a lower than desirable response rate, 33 percent of the interview group were "official" recidivists. When compared to the overall recidivism rate of 23 percent, the subsample constituted a slightly higher risk group.

3.3 Ethical Considerations

Interviews were guided by the principle of informed consent. Participants were only involved in this phase of the study on a voluntary basis. To ensure informed consent, individuals contacted were informed of the purpose of the study, advised of interview structure and length, and assured that their responses would be treated confidentially and used only for purposes of research. Interviewers made clear to subjects that their participation was voluntary. It was explained that the purpose of the evaluation was to collect follow-up information on the current community functioning of program participants. Subjects had the right to withdraw at any time (only one participant withdrew). As the principal investigator, I trained and supervised the research assistant carefully on informed consent, while other interviewers were professional and experienced at this task.

Refusal of a telephone interview is far simpler than rejecting an interview for individuals in custody or on probation. Consequently, program participants contacted who were still involved in the justice system were asked to sign an informed consent form to ensure that they did not feel coerced to participate. The form carefully outlined to Justice Department clients that non-participation would not affect access to programs. By participating offenders also were not given any undue consideration or advantage over their fellows. Copies of the informed consent narrative for telephone interviews and the form provided to Justice Department clients are appended (see Appendix B).

Participants agreed to participate as part of a research program aimed at the evaluation of impaired driving and addictions programs used by Alberta corrections. It may have been more accurate to have identified the purpose as "research" in general as well as program evaluation. The pre-interview information statement presented to subjects stated that "evaluation is intended to see if the program is helping participants, and find possible ways to improve the program. Since one objective of the dissertation is

policy relevant recommendations for impaired driving treatment, the original commitment made to participants was preserved.

If contacted without prior approval of an offender, then friends and next of kin were informed only that a government research project on "programs" was being conducted, to maintain subject confidentiality. Responses were generally positive. In some cases where the family relationship with the offender was apparently strained, the interviewer politely apologized for any intrusion and terminated the inquiry.

The use of a self-report question on repeat impaired driving also raises ethical issues concerning public safety. Perhaps knowing (based on self-reports) an impaired driver has driven drunk recently (and hence might drive drunk again and injure or kill someone) and not reporting it to police is inappropriate, making the question itself unethical. One can sort out this ethical dilemma by logical and practical assessment. Reynolds (1982) has suggested that the moral evaluation of research should examine: the rights of parties concerned with the research; the costs and benefits of the project; the distribution of effects (who benefits), and whether the final decision is consistent with the social scientist role.

The self-report of drunk driving collected in the follow-up interview provides a critical measure of drunk driving recidivism -- its inclusion adds to the research and addresses a recurring problem of detecting DUI. The benefits of the research are likely greater for the public at large than participants. But impaired drivers also benefit from strategies that would reduce drunk driving, both as citizens and in their avoidance of behaviours that might result in self-injury and legal consequences. The potential harm to the public if a drunk driving episode is not reported to the authorities poses a dilemma, as the researcher must balance his responsibility to guarantee participant anonymity with a responsibility to protect the public from a possible injury collision, or even a fatal collision. Significantly, however, the interviewer does not know of any planned intent to drink and

drive again. If an offender responds that he has driven impaired in the last year, then the interviewer has obtained important knowledge that will help in analyzing the effects of the various treatment programs, and other theoretical factors. Furthermore, the interviewer has not been made aware of any specific harm done to others. For the investigator, reporting an offence on the basis of what might happen rather than what did happen does not outweigh the benefits of the proposed research.

Examining the problem practically, what would actually occur if the police were contacted, and informed that sometime in the last year an impaired driver had admitted to driving drunk once again? The admission itself has no legal standing in court and would be unlikely to result in police action or surveillance. How would injured victims of drunk drivers or family members of those killed by impaired drivers weigh the benefits of a self-report drunk driving question against the potential danger of not reporting such behaviour to police? Recent evidence indicates that they support self-report research. The self-report drunk driving question used in the Alsike study was the same question funded by People Against Impaired Driving, and used in the 1992 All Alberta Survey.

3.4 Data Collection

3.4.1 Official Records Data

As with all studies using official measures of crime, this part of my dissertation focuses on records that concern impaired drivers who have been detected, arrested and convicted of drunk driving. Furthermore, most of the study group are recidivists. Given that perhaps only 1 in 1000 DUI trips leads to police action, the study group is unlikely to be representative of all drunk drivers in the general population. In fact, they probably do not even represent many DUI recidivists, as it seems study drivers have a penchant for being caught, despite the low probability of impaired driving detection. Nonetheless, given the high social costs of drunk driving and the high costs repeat drunk drivers present to the justice, motor vehicle and addiction treatment agencies, this deviant group merits the attention of investigators.

Retrospective designs based upon the use of (official) records are fairly common in the field of criminology and in the area of recidivism. These research designs often examine changes over time in specific populations or sub-groups, and usually involve "looking back" at attributes of individuals over a certain period to investigate their influence on later attitudes or behaviours. Many of the problems associated with reliability and validity in retrospective designs are related to the use of official records. In the Alsike program evaluation, the provincial corrections data base CoMIS, the provincial motor vehicle data base (MOVES), and inmate files were the official records used to obtain background demographic and legal data.

To a large degree, reliability and validity of official records are dependent on government staff and organizational mechanisms (policies, supervision, external audits, workplace culture) devised to ensure that recording is accurate. There may be problems in Alberta correctional centre work environments where the data collected on inmates is based initially on self-report, before it is verified through other official records. For example, admitting remand facilities experience frequent inmate movement in and out of the system. Records staff must enter data from inmates immediately upon admission and place a high premium on processing individuals quickly and accurately. Inmates may place themselves in the best light possible upon admission, affecting the accuracy of self-reported information. The validity of official records also may be affected by the accuracy of data definitions used in corrections and motor-vehicle automated systems. For example, reliable and consistent definitions of impaired driving incidents are critical for measurement of prior convictions and future recidivism.

Potential reliability and validity concerns for official records were ameliorated through clarification of measurement qualitatively by interviews of agency workers, independent verification of official data through record linkage between automated data bases (comparison of data common to MOVES and COMIS) and file records, and inmate

self-report. Having worked as the Manager responsible for Research and Computer Systems for the provincial Corrections division, I was well acquainted with the data definitions that were used for CoMIS and offender files, as well as potential problems with data integrity. I reviewed data definitions with CoMIS staff. I found through on-site observation and review of departmental audits that admitting remand centres balance an emphasis on accuracy and swiftness. The corrections division's computer systems staff conduct regular system checks to maintain data integrity. Organizationally, accuracy is emphasized highly. Consequences for error are high, since inaccurate data entry can lead to wrongful release or detention of offenders. It is not unusual for a staff member to be disciplined when a wrongful release occurs. For example, I conducted an internal investigation when I was the Assistant Regional Director where discipline and counselling were recommended for two staff responsible for a wrongful release.

Because my staff and I were not as familiar with the MOVES system as we were with CoMIS, I conducted more systematic interviews on data definitions with Motor Vehicles staff. A former Motor Vehicle division employee assisted me with the initial design and coding of the retrospective data collection instrument, and later trained the research assistant on data definitions in MOVES. The Motor Vehicles division is responsible for licensing of all citizens in Alberta. Staff check data bases diligently, and citizens themselves will initiate action to correct mistakes, particularly when errors impinge an individual's driver's licence.

Records were linked to improve reliability. For example, proper updates to CoMIS are a problem at times, particularly in data fields such as employment upon admission. In cases where doubts existed, two sources were used to cross check the CoMIS main frame system's admission data. One was the temporary absence application narrative, a report which is entered on a separate computer screen that summarized employment in its release plan description. If this information was too vague, then the research assistant reviewed the original inmate file.

The research assistant collected prior impaired driving history and drunk driving recidivism data from MOVES, and she augmented this information with data from CoMIS. Few "missing" charges were observed, but there were a few drunk driving charges not recorded on MOVES that were documented on CoMIS. In general, it was more often the case that MOVES had impaired driving data unavailable to CoMIS. Official records data included age, ethnicity, education, employment status upon admission, prior custody admissions, prior impaired driving convictions, current or prior convictions for other criminal code offences (theft, assault fraud), sentence length, history of treatment, prior residential treatment, current treatment (Alsike, residential treatment, 1 week treatment, AA), new impaired driving convictions and any new convictions for other criminal code offences.

3.4.2 Interview Data

To assess current functioning of offenders who had undertaken addictions treatment, a study questionnaire was devised from a recent survey conducted by a provincial addictions agency, and, to a larger degree, on the 1992 All Alberta Survey conducted by the Population Research Laboratory, University of Alberta. As a result of a pretest, the wording of some questions were modified slightly, while the ordering of the questions was changed considerably. Some of the more sensitive questions concerning impaired driving were rescheduled to early in the interview, where they flowed more logically with alcohol consumption questions. The reordered instrument was deemed suitable after a second, more successful pretest. Interviews ran for an average length of approximately 20 minutes, and the research assistant found respondents to be interested, at times even enthusiastic, in their replies.

The research assistant conducted most interviews. Interviews ran at various times of the day and on some weekends. Generally, optimal times for contacting program participants were between 1700 to 1900 hours in the evening Monday to Friday. It was difficult to arrange interviews if subjects worked out of town. In a few cases respondents

appeared to be passively resisting the interview. The provincial CoMIS system was utilized to track cases who were involved again in the justice system. If offenders were in custody locally, then the research assistant or the principal investigator would interview them in person. Because the interview instrument was not complex and 72 of the 75 items utilized close-ended responses, in-person interview results probably did not differ significantly from telephone inquiries (Elliot and Huisinga 1989; Sudman and Bradburn 1982). In situations where the offender was under community supervision or in custody somewhere else in the province, Alberta Justice staff provided assistance. Because the instrument consisted of simple, straightforward questions, I felt that using corrections staff as interviewers would not impair the validity or reliability of survey results. Probation officers and caseworkers are experienced interviewers and, indeed, they reported no difficulties with the instrument. I reviewed the questionnaires returned by Corrections staff, and observed that they had followed the questionnaire instructions closely.

The use of different interview methods (telephone and in-person) also was unlikely to have substantively impacted reliability. Sudman and Bradburn (1982) found no differences between telephone and interview methods when asking questions about impaired driving arrests. While indicating a preference for in-person interviews on self-reported delinquency, Elliot and Huisinga (1989) found only minor differences between the two methods in their review of the literature.

The experiences of offenders within human service agencies likely helps minimize their efforts at deception. Even first offenders usually are subject to interviews by police, lawyers, corrections workers and treatment personnel, and all information is constantly cross-checked. Often offenders with a large amount of experience in the justice system begin these experiences at a young age, and are used to having to provide information to corrections staff in both community and institutional settings. Interviews with corrections staff suggest that generally, offenders are more straight-forward about personal information than the general population. Offenders appear to experience a

"desensitization" or training effect from the repetition of interviews by so many different people. Often, when dealing with agency personnel offenders are unaware of how much personal previously gathered information is readily available to staff. They are very well aware that file data may be used by staff to test the veracity of their self-reports. For offenders, there is often little to gain and much to lose by trying to mislead interviewers.

The research assistant was trained to avoid demand characteristics when interviewing. For example, when discussing program satisfaction ratings, alcohol consumption and repeat drunk driving, it was important for the interviewer not to encourage socially desirable responses (e.g., positive program ratings, low or moderate alcohol use). The correctional staff who conducted the interviews could not be trained similarly, but they were unlikely to elicit reactivity by subjects. For probation officers and caseworkers, the opinions of offenders towards addictions programs were not critical, since they were not responsible for the quality of Alsike and other alcohol treatment programs. In other words, corrections workers had no "stake" in whether the offenders approved of programs or not. For drunk drivers still entangled in the justice system, the question "did you drive impaired", was directed at the 12 months preceding custody or supervision, and would not have an impact on an offender's custody or community supervision. Monitoring of interviews through review of completed questionnaires suggested that many staff were genuinely curious about the opinions of impaired drivers.

Even if interviewers were cautious about how they asked questions, how likely are people with drinking problems or impaired driving histories to be completely honest in responding to questions on these activities? Self-report studies of alcohol consumption provide evidence that study questions ("did you drive drunk" and "how often do you drink") were likely accorded reliable and valid responses from drunk drivers. Brown, Kranzler, and Del Boca (1990) found a 97% concurrence rate between urinalysis and self-report by a group of alcoholics reporting for treatment. Myers (1983) found no appreciable difference in alcohol consumption reports by offenders and their live-in

spouses, when he examined the amount of alcohol inmates consumed prior to their most recent incarceration. In both cases, offenders likely knew or suspected that their reports would be checked. Again, offenders are likely to be honest because they often are not sure how much information is available to justice system practitioners.

Program evaluation subjects would have completed addictions programs 2 to 4 years prior to being interviewed, but memory loss is unlikely to have impacted findings. In general, alcohol abuse studies have found strong reliability in drinking behaviour and life event reports (Sobell et. al. 1988). Errors are more likely to result from mistakes in the temporal placement of life events, or misunderstanding of questions. In a limited test with a young offender population, McMurran, Hollin, and Bowen (1990) found good test-retest reliability in measures of alcohol consumption approximately three months apart.

In surveys assessing alcohol consumption, simple questions tend to show higher reliability (Embree and Whitehead 1993). In the Alsike survey, interview questions concerned either the respondent's immediate circumstances, or the 12 months prior to the interview. To limit misunderstandings, most questions were closed-ended and a limited range of responses were allowed. For example, the question regarding alcohol consumption differentiated only between daily, a few times a week, weekly, monthly, every few months, or abstinent in the past 12 months.

To measure recidivism, self-report measures of impaired driving in the year preceding the interview were used as an alternative to official drunk driving convictions. Of the 145 respondents, about 9 percent (13) admitted to driving drunk within the past year without being caught, while an additional 16 percent (23) reported that they were apprehended and formally charged. Combining offender reports of detected and undetected drunk driving, the DUI recidivism rate by interviewees was 25 percent over the past year. Confirmation of official charge status was obtained through MOVES and CoMIS. The self-reported rate of 25% was slightly higher than the official rate of 23

percent for the total sample of 692, but was lower than the official recidivism rate of 33 percent for the interview group. It is important to recall, however, that the self-report period covers only the most recent 12 months, while the follow-up period for official recidivism is much longer, ranging from 24-45 months.

3.5 Measurement -- Dependent Variables

3.5.1 Drunk Driving Recidivism and Alcohol Consumption Indicators

The evaluation data set provides two indicators of DUI recidivism (Table 3.2 below, at end of section). First, in the retrospective records based phase of the study, repeat impaired driving was indicated by official criminal code convictions. Recidivism included convictions for impaired driving, driving over .08 and refusal to blow into a breathalyser. To be convicted of a new drunk driving charge, police had to observe them driving drunk, then stop them, check for signs of impairment, arrest them and charge them, and then they had to be found guilty in court. Thus, drunk driving behaviour had to be identified and acted on by police, then validated through the legal system's adversarial process. MOVES was checked for new convictions for a period ranging from 24-45 months. The three official indicators of drunk driving (drive over .08, impaired driving, refusal to blow) represented detected incidences of driving while drunk, but each indicator presents potential problems. The impaired driving conviction might have involved a drug other than alcohol, and the refusal to blow into a breathalyser may have denoted an incident where the offender was not drunk. A large amount of measurement error, however, is unlikely. Most offenders had at least one prior conviction for drive over .08, and corrections records showed that most inmates verbally admitted to casework staff that they had driven drunk (which provides a high degree of convergent validity). Some offenders also admitted to casework staff that they were drunk when they refused to blow. The average number of prior impaired driving convictions was 3, with a range of 0 to 10.

To partially compensate for the low probability of detection by police (1 in 1000 trips), offender self-reports were utilized as a second indicator of repeat drunk driving. This indicator was created from two self-report questions:

Have you driven impaired in the last 12 months?

yes *1*
no *2*
not stated *3*

If you did drive impaired, were you convicted or found guilty of a drinking and driving offence?

yes, how many times _____ *1*
no *2*
not charged *3*
not stated *4*
not applicable *5*

For those serving custody sentences, the self-report DUI questions were rephrased to assess the 12 month period immediately preceding the current jail term. Indicators of DUI recidivism through official records were available for all 692 cases. Self report drunk driving responses were obtained for 144 of the 145 interview follow-up cases.

New convictions were collected as interval variables, but for purposes of analysis, both official and self-report indicators of DUI recidivism were categorized as dichotomous dependent variables (1=yes, 0=no). Use of an interval variable to measure differences in propensity for repeat drunk driving was not warranted, because most drunk drivers only reoffended once (new DUI: 0=77%, 1=16.9%, 2=4.5%, 3=1.3% and 4=.3%).

An alcohol consumption indicator was collected as part of an attempt to examine the effects of low self control and stress on drinking, and the effects of drinking in turn upon self report DUI recidivism.

In the past 12 months, how often did you generally drink alcohol?

every day	*1*
4 - 6 times a week	*2*
2 - 3 times a week	*3*
once a week	*4*
once or twice a month	*5*
less often than once a month	*6*
never	*7*
don't know	*8*
not stated	*9*

For those interviewed while in prison, the question was rephrased to assess the 12 month period immediately preceding their custody placement.

This alcohol consumption indicator cannot distinguish binge drinkers who have bouts of heavy drinking (generally considered to be 5 or more drinks per occasion). The data cannot distinguish those who may be classed as chronic alcoholics (60 or more drinks per month). Yet the indicator captures a significant range of alcohol consumption behaviour (daily to abstinent), and can still provide insight into the effects of stress on patterns of consumption and the consequent relationship of these patterns with drunk driving.

3.6 Measurement -- Independent Variables

3.6.1 Specific Deterrence

The specific deterrent effect of sanction severity was measured by using official record indicators of sentence length and sentence type. The more time a drunk driver spends in custody, the greater the specific punishment, and, according to proposition one, the less likely he will be to drink and drive again. Serving jail time on weekends or because cash is not readily available to pay a fine are situations that are not as punitive as straight custody terms, and these less severe sentencing outcomes are predicted to lead to more drunk driving recidivism (proposition 2). Sentence length was measured using the offender's total custody days.

Some offenders were incarcerated for both impaired driving and non-DUI offences. Consequently, total days for both impaired driving and non-DUI offences were added to estimate sentence severity. If only the impaired driving term were utilized, then the aggregate custody days would decline, underestimating the amount of punishment meted out to individual offenders (Mean impaired sentence length = 199.5 days, s= 190.0; mean total sentence length= 216.9, s=209.4, t= 4.72***). It is unlikely that offenders could distinguish the punishment effects of impaired driving sentences from the total days they served. Other indicators of deterrent severity were intermittent server and fine defaulter sentence status. They were measured as binary variables (1=yes, 0=no).

The number of days sentenced to custody does not break down the proportion of days actually served, limiting, to a degree, the indicator's ability to accurately measure severity. The actual number of days served, however, is unlikely to be a better indicator of severity. Days served might better identify a selection effect, because inmates who serve proportionately less of their sentence achieve this by better institutional behaviour, a less serious criminal record, and more community support. Whether served entirely or not, the total sentence length provides a clear measure of the penalty assigned by the courts to the offender, and represents the maximum possible penalty that could result from the drunk driving conviction.

Swiftness of punishment (e.g., days from offence to arrest, conviction, incarceration) is not measured, and developing a celerity indicator poses many problems. More sophisticated hardcore offenders may delay the court process. Recidivism outcomes for those who take longer to punish would probably indicate a selection effect, not deterrence.

The effects of the perceived certainty of punishment has great prominence in the deterrence literature (Paternoster 1987; Williams and Hawkins 1986), and has been examined by impaired driving researchers. Deterrence holds that individuals who

perceive a low probability of detection and arrest (certainty of punishment) for an offence such as drunk driving are more likely to offend than those who perceive a high probability of arrest and punishment. Deterrence findings for impaired driving, however, are not conclusive (Health and Welfare Canada 1993, but see Wieczorek, Mirand, and Callahan 1994). Unfortunately, indicators in the evaluation's official records and interview data set did not allow for measurement of the deterrence theory construct of certainty. Regardless, the assessment of specific deterrence is important. Theoretically, the potential relationship of sanction severity with low self-control and strain/stress theories make it important to include in this study. Methodologically, it serves as an important control for alternative explanations of DUI recidivism. From an applied perspective, sentence severity remains a topical issue for policy makers, while its impact on drunk driving recidivism is far from clear in the literature.

3.6.2 Low Self-Control: Analogous Acts and Age

To test general theory of crime explanations of DUI recidivism, indicators were developed to measure low self-control behaviours, involvement in analogous acts, and age (propositions 3 and 4). These indicators represent three of the most important features of low self-control theory.

Three central elements of the low self-control trait are impulsiveness, risk taking, and pleasure seeking without thought to consequences. The behavioural indicator of prior drunk driving convictions was to represent these three constructs. Drunk driving, particularly when it results in more than one conviction, indicates a propensity towards impulsive, risk taking behaviour arising from the pleasure seeking activity of excessive drinking. Given the escalating penalties associated with repeat DUI, continued involvement indicates an inability or unwillingness to learn from past consequences.

Drunk driving history was treated as an interval variable. Official records were used to calculate the number of prior criminal code convictions for the following: drive over .08, impaired driving, and refusal to blow into a breathalyser.

Alcohol consumption was used as an indicator of the low self-control trait of pleasure seeking. Individuals with low self-control will consume more alcohol because they place higher priority on their pleasure than those with high self-control. Alcohol consumption was treated as an ordinal variable, and obtained through the interview questionnaire.

According to the general theory of crime, involvement in analogous deviant acts also indicates low self-control. This is also referred to as the versatility construct: offenders do not specialize, but are likely to commit a variety of deviant acts. Analogous acts are not limited to predatory crimes such as theft and assault, but also include less sanctioned but disreputable behaviours such as smoking marijuana, high risk driving and collisions. Gottfredson and Hirschi specifically argue that analogous acts are the best indicators of low self-control.

Involvement in predatory crimes (e.g., assault, theft, was used as an indicator of analogous acts. From official records, a dichotomous variable was derived using prior or current convictions for other criminal code offences such as theft, fraud or violence (1= yes, 0= no). Unfortunately the number of prior convictions was not collected, precluding use of an interval variable.

According to the general theory of crime, age articulates the general theory principle that crime declines, but does not disappear as offenders get older. This principle is strongly supported in the literature. Age was coded as an interval variable from official records.

3.6.3 Strain/Stress

Stress indicators are required to identify strains that may lead to repeat drunk driving (proposition 6). Stress may not uniformly result in repeat drunk driving, because individuals may utilize or have differential access to coping resources that could offset strains. It is also important to develop indicators of coping resources that may condition or ameliorate the effects of stressors (propositions 7 and 10).

(a) Stressors: Social Status, Physical Health, Driver's Licence, Life events

Chronic or ongoing stressors are measured by indicators of social resources, physical health and possession of a driver's licence. Aboriginals have "lower" social resources than non-Aboriginals (propositions 8 and 9), putting them in a position of chronic stress (strain). This indicator was available through official records for all cases and was measured as a binary variable (1=Aboriginal, 0=non-Aboriginal). This classification can be broken down further into Registered Indian (N=163), Metis (N=64), and Non-Registered (N=11) in the official record data set, but obviously cannot be examined from interview results due to sample size limitations.

Chronic stress due to poor physical health or disability was indicated by responses to four questions in the interview data set (N=140 to 143). These indicators provide perceptual assessments of individual health and/or disability. Responses for each physical health question were used to create interval variables. The four questions also may be used to create a physical health index.

In general, compared to other persons your age, would you say your health is

much better *1*
better *2*
the same *3*
worse *4*
much worse *5*
no opinion/not stated *6*

Have you cut down on any normal activities due to health?

yes *1*
no *2*
not stated *3*
not applicable *4*

Do you have trouble with pain or discomfort?

yes *1*
no *2*
not stated *3*

Are you limited in the kind or amount of activity you can do at home, at work, or at school because of a long-term health problem? By long-term, I mean a condition that has lasted or is expected to last more than 6 months.

yes *1*
no *2*
not stated *3*

Lack of a valid driver's licence is a chronic stressor because it limits individual mobility, creates dependence on others for transportation, is a reminder of a negative status (suspended driver) and puts an individual in the stressful position of having to drive while under suspension, thereby risking further penalties (N=145). Possession of a driver's licence was coded as a dichotomous variable (1=yes, 0=no) and determined by the following self-report question:

Do you currently have a valid driver's license?

yes *1*
no *2*
not stated *3*

Life event stressors are indicated by changes in employment and marital status, a residential move, or new crime conviction (theft, violence, fraud). For those who were employed when last incarcerated, loss of employment or break up of a marriage or common-law relationship are indicators of stressful life events. These indicators were derived from analysis of official records and self-report data, and exploited the

longitudinal design of the Alsike evaluation data set. Custodial admission data provided Time 1 employment and marital status, while interview data gave a Time 2 update after the 24-45 month follow-up period on job situations and living arrangements. Life event stress was coded dichotomously (yes=1, no=0) for both employment and marital status changes.

Frequent changes in personal residence also indicate life event stress. Change of residence was treated as an interval variable (N=142) and developed as an indicator from the following interview question:

How many times have you changed addresses in the past two years?

_____

Individual perceptions of stress are useful as general indicators of strain. Two indicators measured as interval variables were acquired from self-report responses to the following questions:

How satisfied are you with your life?

very dissatisfied	*1*
somewhat dissatisfied	*2*
dissatisfied	*3*
somewhat satisfied	*4*
very satisfied	*5*
satisfied	*6*
no opinion/don't know	*7*
not stated	*8*

Would you describe your life as

very stressful	*1*
somewhat stressful	*2*
not very stressful	*3*
not at all stressful	*4*
no opinion/don't know	*5*
not stated	*6*

Questions gauging individual stress (N=140) and life satisfaction (N=142) may be obscured by subject interpretation, but the use of two questions should enhance reliability and validity. If one wishes to know whether a person is stressed, then asking directly appears a reasonable approach. Asking people to assess how happy they are with their life also seems likely to tap Agnew's affective domain of frustration/anger and equity. An individual expressing unhappiness with life is likely to be feeling frustration and unlikely to believe life is fair or equitous.

(b) Coping Resources: Education, Employment, Social Support, Maturity, Treatment Programs, Drinking Avoidance Strategies

Offenders have a number of potential coping resources available to help them avoid stress and consequent repeat drunk driving. Education, employment, social support and maturity are all potential assets in dealing with stressors. Additional resources include completion of treatment programs (proposition 10), and individual strategies directed at avoiding both excessive drinking and drunk driving situations.

Education and employment are two important coping resources for the management of stress. Those with more education tend to obtain better and more stable jobs, resulting in less stress and a lower likelihood of DUI recidivism. The education indicator was obtained from official records (N= 692) and measured as an interval variable (years of education grade 1, 2, ...12, one year post secondary = 13, two years= 14). Being employed provides financial resources and a potential network of social support resources on the work site. Job status was measured differently in the retrospective and interview phases of the study. Official records recorded employment upon admission to custody as: employed full-time, part-time, student, retired and unemployed (N=692). Because most subjects were working or unemployed (92%), the retrospective employment indicator was collapsed into a binary variable (1=employed, part-time, student, retired, 0=unemployed). The interview data set measured employment status in a similar way, and it was again

coded as a binary variable (1=employed, part-time, student, retired, 0=unemployed) (N=140).

Loss of employment (N=145) was treated as a life event stressor in the last section (e.g., was employed, now unemployed). From time 1 and time 2 data, an indicator of employment gains also was calculated (was unemployed, now employed), to assess if an increase in coping resources impacted repeat DUI.

Marital status was used as a crude measure of social support, and measured dichotomously (1=married or common-law, 0=single, divorced, separated or widowed). Marital status was available in the official records (N=692) and through interview data (N=145). Earlier, changes in marital status over the original study period of 24-45 months were recorded as possible life event stressors (e.g., married now separated). This provides an opportunity to create an indicator of possible increases in social support (e.g., was single, now married), and assess its impact on DUI recidivism.

Generally, marital status is assumed to be crude measure of social support. The literature suggests, however, that more sophisticated indicators do not always result in the observation of stronger effects. In her review of the literature, Thoits (1995) concluded that the simplest and most powerful measure of social support is whether a person has a confiding relationship, preferably with a spouse or lover. While the use of marital status can measure social support only approximately, those cohabitating with a spouse are obviously more likely to have a confiding relationship than those who do not.

Social support is generally thought of as a coping resource, but significant others may also increase stress or promote negative behaviours. For example, association with peers who drink and drive may produce more negative than positive outcomes. Such contact may result in increased use of drinking and DUI behaviours as outlets for stress. Negative social support was indicated by a self-reported episode of being in a drunk

driver's car (N=140). This indicator was treated as a dichotomous variable (1=yes, 0=no), and was developed from the following question:

In the past 12 months, have you been a passenger in a vehicle where the driver was impaired?

yes *1*
no *2*
not stated *3*

Maturity is not often thought of as a possible resource to manage stress. Age provides exposure to a variety of life situations and possible insight into ways to manage problems. Age in years at the time of program attendance was used as an indicator of maturity, treated as an interval variable, and taken from official records.

Almost all impaired drivers in the sample were required to undertake some form of alcohol education program. The general intent of these programs is to provide drunk drivers with the knowledge and skills to avoid excessive drinking and future drunk driving. Thus, treatment programs are an important potential coping resource for avoiding stress. To measure the effects of different treatment intensity, an indicator was developed from official records. The amount of program treatment time was broken down into 4 levels (1= outpatient, 5 day education or 14 day camp, 2= 14 day camp +outpatient, education, 3= 28 day residential, and 4= 28 residential + 14 day camp). Because of the manner in which the data was collected, more refined measures were not possible. An additional indicator of alcohol treatment available in the official records was whether or not drunk drivers had undertaken residential treatment prior to their serving custody term. Because of its intensive nature (3-4 weeks at a treatment facility), residential treatment could be a helpful resource for drunk drivers. Prior treatment in a facility was coded dichotomously (1=yes, 0=no).

Purposeful strategies by individuals to avoid stressful situations or abuse of alcohol are possible coping resources. By applying lessons learned in treatment programs or to

avoid incarceration, impaired drivers may modify or limit activities and avoid situations that would lead to extreme alcohol consumption and repeat DUI. To assess the extent of drinking avoidance behaviours and their effect on alcohol consumption and DUI recidivism, an indicator was derived from the interview data set (N=138). The following five questions were utilized to create a 5 item index of drinking avoidance strategies (alpha= .70):

In the last 12 months, have you done any of the following to try to cut down on your drinking?

	Yes	*No*
skipped parties or other social events	*1*	*0*
avoided being with friends who drink a lot	*1*	*0*
gone to bars or pubs less often	*1*	*0*
limited the number of drinks you have had	*1*	*0*
tried to avoid drinking	*1*	*0*
none	*1*	*0*
not stated	*1*	*0*

3.8 Discussion

Measurement definitions are summarized below in Table 3.2. These indicators are intended to examine exploratory models of deterrence, low self-control and strain/stress outlined in chapter 2. These models should be considered exploratory and heuristic, in light of the approximate nature of some of the indicators and the modest self report sample size (N=145) and its lack of representativeness.

The widest diversity of indicators are available for strain/stress theory, particularly in the interview responses. Employment, education, marital status, recidivism for other crimes, and alcohol consumption could be "secondary" indicators of low self-control constructs (Gottfredson and Hirschi 1990). Individuals who are more physical and less mentally oriented would have less education. Those with less ability to follow through on tasks would be more likely to be unemployed or to commit to a relationship. Future recidivism demonstrates an analogous act, and drinking excessively might be a pleasure

seeking indicator. These interpretations, however, are all secondary and outcome based. Furthermore, the strain/stress indicators can be linked to excessive drinking stress and DUI recidivism, providing a means to measure the direct and indirect influence of stress on recidivism, something not possible with low self-control.

Similarly, "being in another drunk driver's car" was used as a coping resource indicator, rather than a measure for differential association theory. Riding with another drunk driver could also be an indicator of association with deviant others, but it is the only measure available. Differential association indicators of frequency, duration and intensity of illegal definitions, and modelling are not present. Use of a single, crude indicator of association with delinquent others would provide only a very incomplete test of differential association theory.

Age has meaning for both the general crime theory and strain/stress. Age was used to test the low self-control principle that deviance declines, but does not disappear, as offenders get older. The age effects are also interpreted as the coping resource of maturity. The general crime theory presents some concern, as it does not conceptually link age to the trait of low self-control, but instead presents age effects on deviance as axiomatic, like those of gender. Age as "maturity," however, seems more consistent with stress theory's construct of coping resources, and is more compatible with stress theory's analytic strategy of examining the relationships between social situations, individual characteristics, and available resources to explain stress outcomes. Hence, I thought it important to attempt to also operationalize the construct of coping resources as maturity/age, in an effort to broaden the concept of coping resources and to offer another possible explanation for the inverse relationship between crime and age.

Accurate measurement can be difficult, particularly when researchers analyze official records and secondary data. Social support illustrates some of the difficulty in operationalizing theoretical concepts through broadly measured indicators. Stress theory

assumes that the presence or absence of social support will mediate stress effects. The concept of social support implies that help from others will enable people to cope more effectively with chronic problems, negative life events, and daily hassles. My dissertation assesses social support through use of a "marital status" indicator. It assumed that offenders in a married or common-law relationship would be receiving social support from a spouse, and that this support would buffer the effects of stress and reduce the likelihood of drunk driving recidivism. The social support literature, however, suggests that although marital status represents a reasonable (albeit crude) indicator of social support, findings may be weak or even opposite to those predicted (Thoits 1995). These findings however, do not exclude marital status as an indicator of social support. Social support operates in different ways. The effectiveness of social support varies due to gender and differences in the type of life stressors. In some cases, significant others and family members increase individual stress levels (Thoits 1995). Marital status may be a source of stress, or the marital partner may be a drinker who in turn affects drunk driving opportunities. In either case, my study will provide some insight into whether or not marital status per se works as a positive social support for drunk drivers, which is an area that we know little about. Furthermore, use of an indicator of negative social support (riding in a car with a drunk driver) builds on recent findings in the literature which indicate that social support does not always operate to alleviate stress (Thoits 1995).

To conclude, this study may not measure with sufficient precision the linkages between concepts and indicators for it to draw strong conclusions. Use of less than ideal indicators is still warranted, however, when we know little about an area (such as drunk driving) but have theory to guide us in building on extant research, as in the case of social support.

Table 3.2 Dependent And Independent Variables

Variables	Indicator	Level of Measurement	Valid N
Dependent Variables	**Indicator**	**Level of Measurement**	
Recidivism	Drunk Driving		
	-new DUI conviction	(1=yes, 0=no)	692
	-self-report	(1=yes, 0=no)	144*
Alcohol Consumption	Drinking Frequency	*(1=every day 2=4 - 6 times a week 3=2 - 3 times a week 4=once a week 5=once or twice a month 6=less often than once a month 7=never)*	138*

**Also used as an independent variable on Self-Report DUI Recidivism*

Independent Variables	Indicator	Level of Measurement	Valid N
Deterrence			
Severity	Sentence Length	Days (1,2,3,..1500)	692
	Sentence Type		
	-fine default	(1=yes, 0=no)	
	-intermittent	Straight sentenced will be the	
	-straight sentenced	reference category.	692
General Theory of Crime			
Low Self Control	-Prior Drunk Driving Convictions	(0, 1,2,3,...)	692
Analogous Acts	-Other Crimes (theft, fraud, assault)	(1=yes, 0=no)	692
Age	Years	(18,19, 20...)	692
Strain/Stress			
Chronic Stressors	Social Status		
	-Aboriginal ethnicity	(1=yes, 0=no)	692

*interview follow-up only

Table 3.2 Dependent And Independent Variables

Variables	Indicator	Level of Measurement	Valid N
Chronic Stressors	Physical Health		
	-self-assessment of physical health	(1, 2, 3, 4, 5)	138*
	-reduced activities due health	(1=yes, 0=no)	
	-pain or discomfort	(1=yes, 0=no)	
	-reduced activities due to chronic health problems	(1=yes, 0=no)	
	Valid Driver's Licence	(1=yes, 0=no)	145*
Life Event Stressors	Marital Status Change		
	-recently divorced or widowed	(1=yes, 0=no)	145*
	Employment Status Change		
	-recently unemployed	(1=yes, 0=no)	145*
	Change in Residence	(0,1,2,3...)	142*
Perceptual Stressors	Self-Assessment of Stress	(1,2,3,4)	140*
	Self-Assessment of Life Satisfaction	(1,2,3,4,5)	142*
Coping Resources	Education in years	(1,2,3,4,5...13,14	692
	Employed	(1=yes, 0=no)	692
	Gone from unemployed to employed	(1=yes, 0=no)	
	Social Support	(1=married or common-law,	
	-marital status	0=single, divorced or widowed).	692
	-gone from living alone to cohabiting.	(1=yes, 0=no)	
	-negative social support	(1=yes, 0=no)	145*
	(passenger in car with drunk driver)		140*
	Maturity		
	-age in years	(18,19,20...)	692
	Treatment Programs		
	-AA, AADAC, or 14 day camp program	(1=yes, 0=no)	692
	-14 day camp +AA, AADAC.	(1=yes, 0=no)	
	-28 day residential	(1=yes, 0=no)	
	-28 residential + 14 day camp program	(1=yes, 0=no)	
	Prior Residential Treatment		692

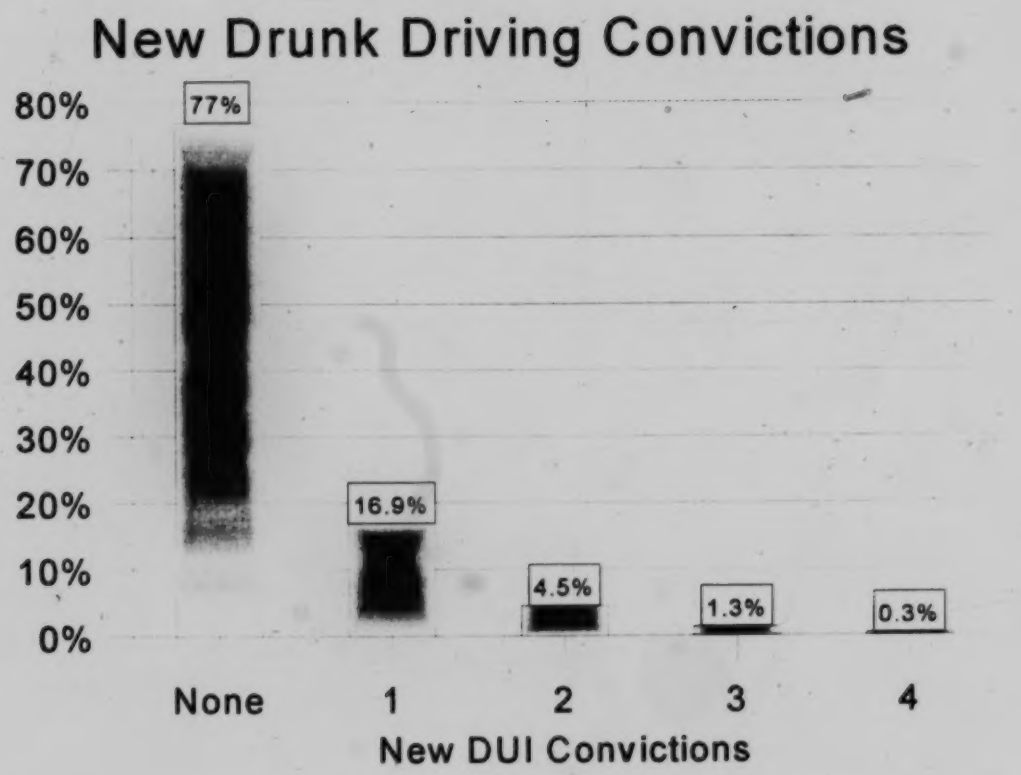
*interview follow-up only

(continued)

Table 3.2 Dependent And Independent Variables

Variables	Indicator	Level of Measurement	Valid N
Coping Resources	Drinking Avoidance Behaviours		
	-skip parties	(1=yes, 0=no)	138*
	-go to bars less often	(1=yes, 0=no)	
	-limit number of drinks	(1=yes, 0=no)	
	-avoid friends who drink	(1=yes, 0=no)	
	-avoid drinking	(1=yes, 0=no)	

*interview follow-up only



Graph 3.1

3.8 Sample and Subsample Descriptions

3.8.1 Official Drunk Driving Recidivism

Most impaired drivers in the study group were not subsequently convicted of a new impaired driving offence (Graph 3.1). Over the 24-45 month follow-up, most of those who reoffended only were convicted of one new DUI offence. Overall, 23 percent of the sample of 692 impaired drivers reoffended by being convicted of Impaired Driving, Driving Over .08, or Refusing to Blow into a Breathalyser. Seventeen percent (17%) were convicted of one new DUI offence, 5 percent were detected committing two, 1 percent

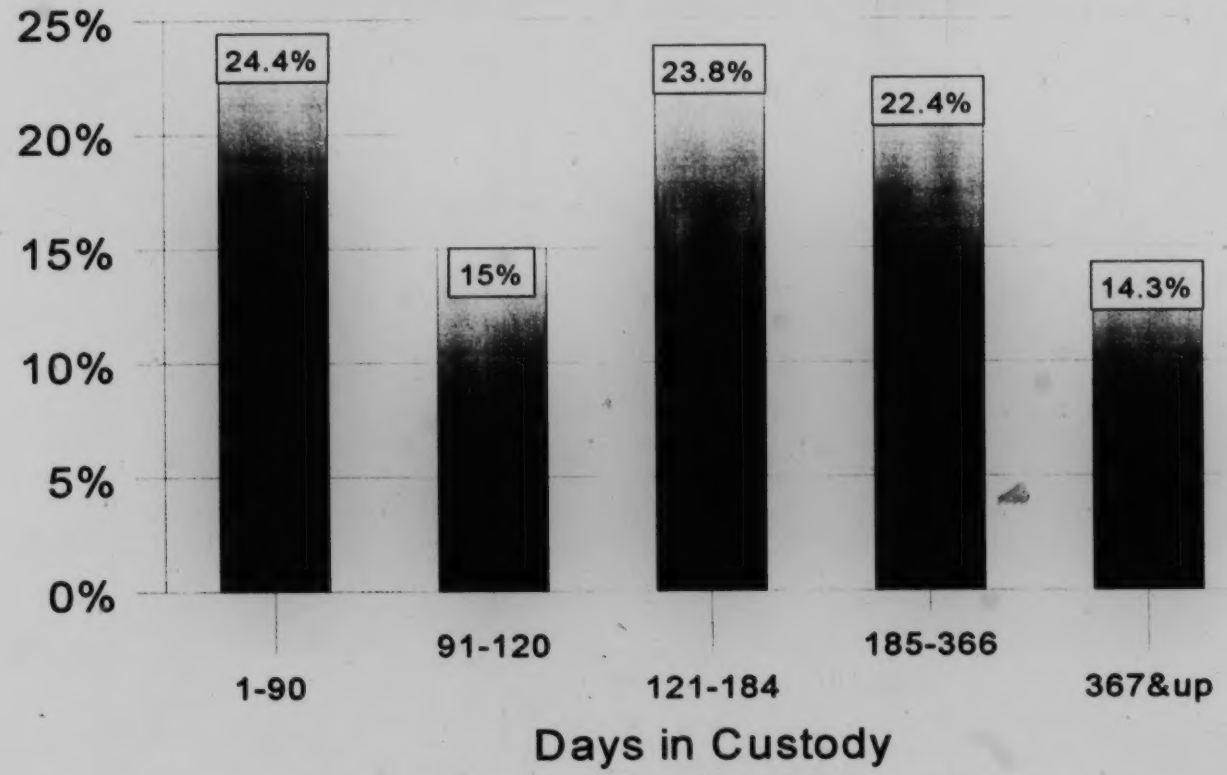
reoffended three times and less than 1 percent (.3%) were convicted of four new drunk driving offences.

3.8.2 Specific Deterrence

The average sentence length for the study sample was 217 days (s= 209.4). The five sentence categories depicted in Graph 3.2 provide additional perspective on sentence length distribution. Sentence length was categorized according to typical court sentences, (1-90 days or three months, 91-120 days or four months, 121-184 days or six months, 185 days to 366 days or one year, and a year and more). About 15 percent of the sample served from 91-120 days, 24 percent served 121-184 days, 22 percent 185-366 days, and about 14 percent served 367 days and more.

Most cases serving 90 days or less were fine defaulters (92) and intermittent servers (86). They comprised one hundred and sixty-four of one hundred and sixty-eight cases. The average sentence length of fine defaulters was 54 days (s.=30.7), with weekenders serving an almost identical average of 53 days (s=40.4).

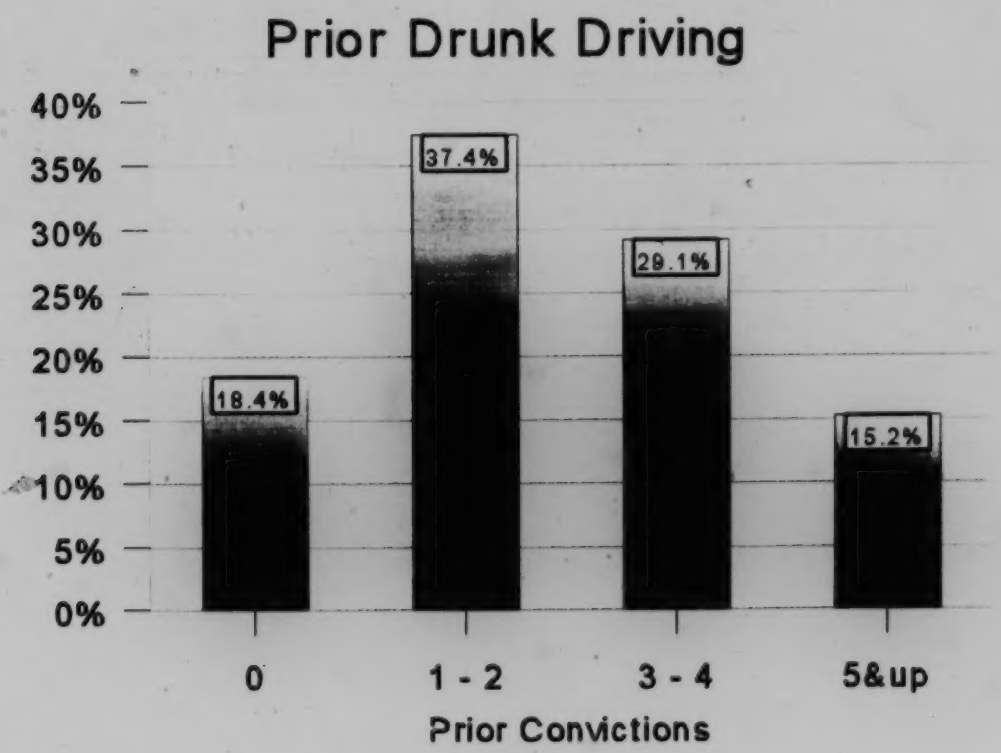
Sentence Length



Graph 3.2

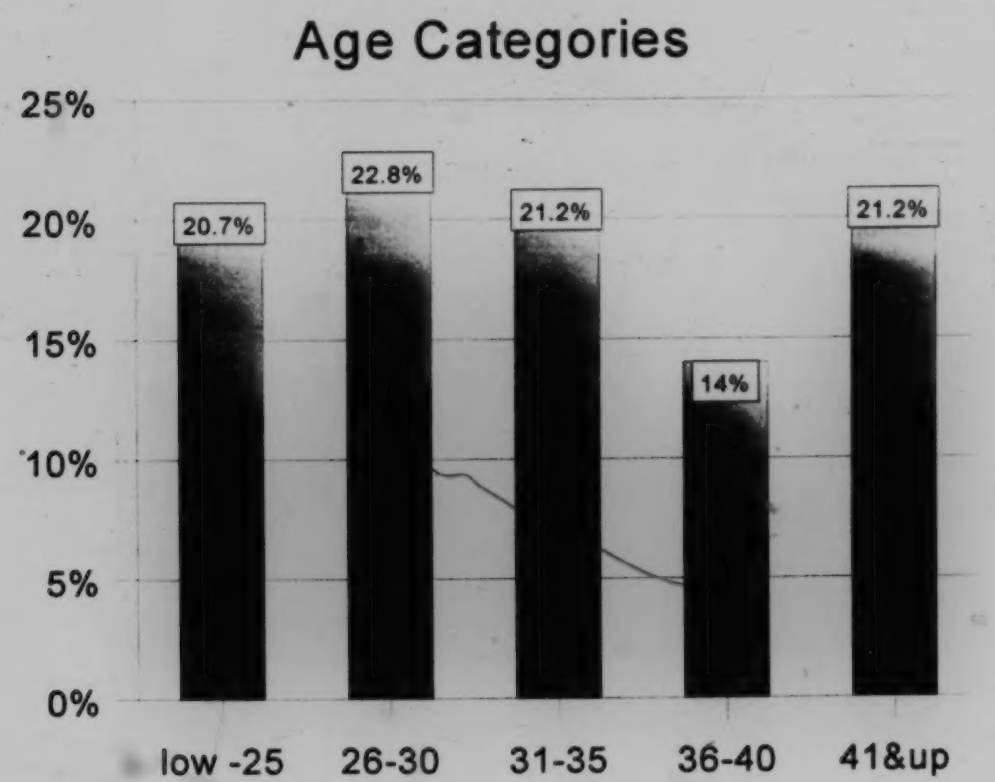
3.8.3 Prior Deviant Behaviours and Age

Prior drunk driving behaviour varied considerably (Graph 3.3). The mean number of prior DUI's was 2.5 (s= 2.5). The vast majority of impaired drivers (82%) were repeat offenders. Only 18 percent of the sample had no prior convictions (serving on their first DUI), 37 percent had one or two priors, 29 percent had three to four priors, and fifteen percent had five or more DUI's. This means that over half the sample (55%) had two priors or less, while slightly less than half had three or more convictions (45%), indicating a degree of persistence in their drunk driving behaviour.



Graph 3.3

Just under half of the sample (44.8%) had been convicted of a predatory (assault, theft, fraud) crime. In the sense that they had no prior record of other crime, many drunk drivers in the sample appeared to "specialize" in DUI activity. In addition, most did not fall into the nineteen to twenty-four year old age group generally associated with peak years of criminal activity. The mean age of offenders was thirty-four years (s= 9.3). A breakdown using mostly five year increments from 18-40 years provides further perspective (Graph 3.4). About 21 percent of the sample were twenty-five or younger, 23 percent were aged twenty-six to thirty, 21 percent (21%) were thirty-one to thirty-five, about fourteen percent (14%) were thirty-six to forty, and twenty-one (21%) percent were forty-one years of age and older. Impaired driver ages are not clustered in the early to

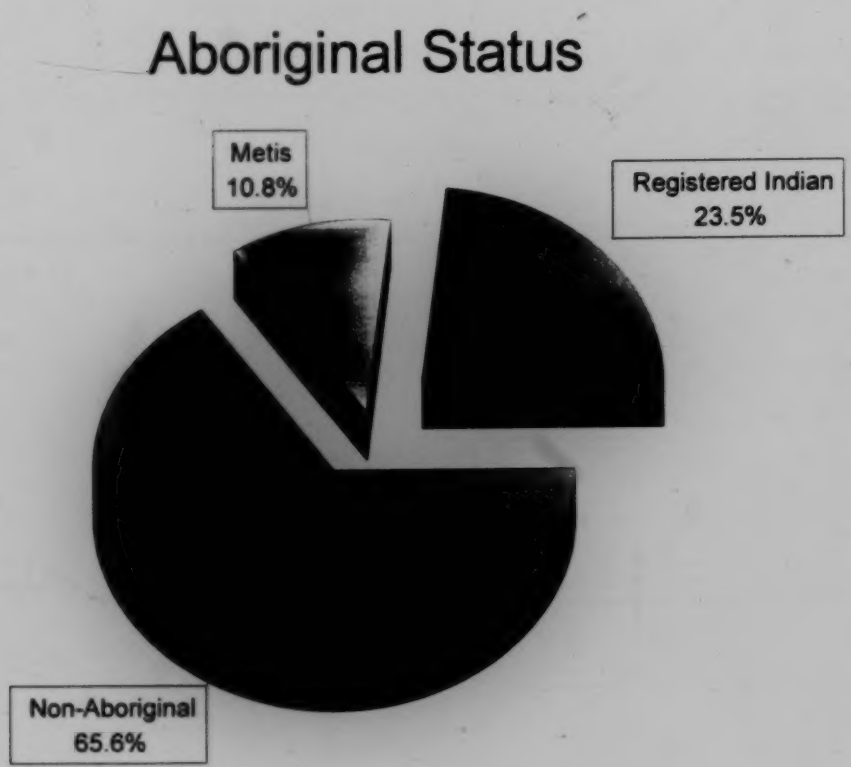


Graph 3.4

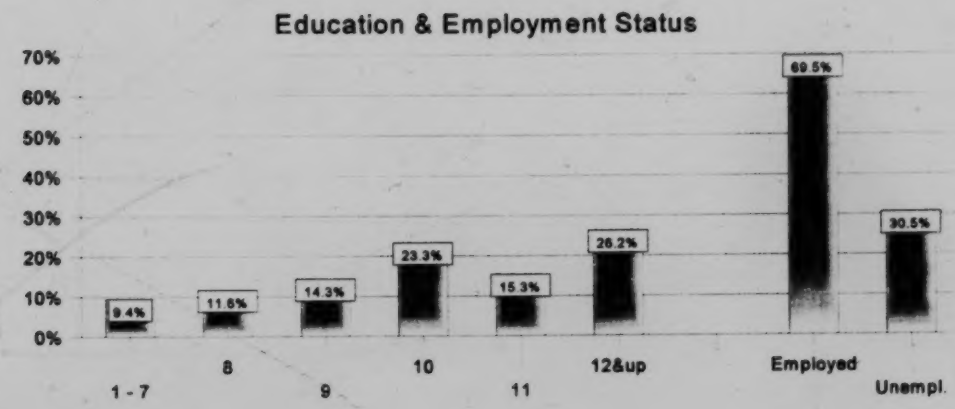
mid-twenties, in contrast to offender populations generally (Hartnagel 1996). Nonetheless, advancing age does appear to bring with it a decline in drunk drivers in the sample. The proportion of impaired drivers begins to decline in the sample after about thirty-five years of age. Those forty-one and older comprise only a fifth (22%) of the study group.

3.8.4 Stress, Coping Resources and Treatment Resources

Aboriginals make up about 5 percent of Alberta's adult population, but are clearly over-represented in the impaired driver sample. Registered Indians made up 24



Graph 3.5



Graph 3.6

percent of the sample group while Metis and Non-Registered Indians (Graph 3.5) totalled 11 percent. Non-Registered Indians made up only 1.6 percent of all ethnic cases, and were collapsed with Metis offenders. Combined into one Aboriginal category, Registered Indian and Metis made up 35 percent of the sample. The remaining 66 percent of cases was comprised primarily of Caucasian offenders. Arabian, East Indian and "other" comprised less than 1% of the sample.

The majority of the sample group achieved an education between grade ten to twelve years and most were employed when admitted to custody. The mean grade level for the study group was 9.9 with a standard deviation of 1.9 (Graph 3.6). Sixty-five percent (65%) had completed grades ten to twelve. Nine percent (9%) had grade seven or less. On the other hand, less than 1 percent of the sample obtained further formal education after grade twelve. Seventy percent (70%) of offenders reported that they were working when admitted to custody.

Impaired drivers were involved in a number of different living arrangements. Only 16 percent of drunk drivers were married, while an additional 30 percent were living in a

common-law relationship. Over a third of offenders were single (37%), 10 percent were separated or divorced and less then 1 percent had been widowed. When married and common-law categories are combined, just under half of the sample, or 46 percent received social support from a spouse, while 54 percent lived on their own.

Many drunk drivers in the sample had previously taken extensive addictions programs, and all offenders completed some form of treatment while they were in custody, upon their release, or both during their sentence and upon release. Prior to their current incarceration, 35 percent of the sample had completed a residential alcohol treatment program (Graph 3.7). During the current custody term, the majority (64%) of the sample undertook moderate amounts of treatment (Graph 3.7). This group undertook the two week in-house Alsike program while in custody, education programs in the community, such as the two week West End Clinic day program, attended out-patient counselling through the Alberta Alcohol and Drug Abuse Commission, or attended Alcoholics Anonymous meetings. About 16 percent combined the Alsike program with another community-based education program and 11 percent attended a four week residential treatment program for alcohol abuse. Finally, 10 percent attended both Alsike and an in-house residential program, a fairly extensive residential regime of six weeks.

Prior Residential Treatment Treatment During Most Recent Incarceration

Graph 3.7

3.8.5 Summary: Official Records Sample Description

Official records data depicts an impaired driving sample of males whose characteristics are consistent with the extant DUI literature. The sample group tends to be younger, less educated than average, less likely to be employed, and slightly more than half do not have a spouse. Aboriginals are greatly over-represented among the impaired driving group. Most drunk drivers were recidivist; two thirds of the sample had been convicted at least three times. Just under half of the sample had been convicted for a crime such as assault, theft or fraud. About a third of the group had taken intensive treatment previously, and all offenders took some form of treatment during their current incarceration. Overall, the study group is quite heterogeneous, also consistent with the impaired driving literature (Simpson and Mayhew 1992).

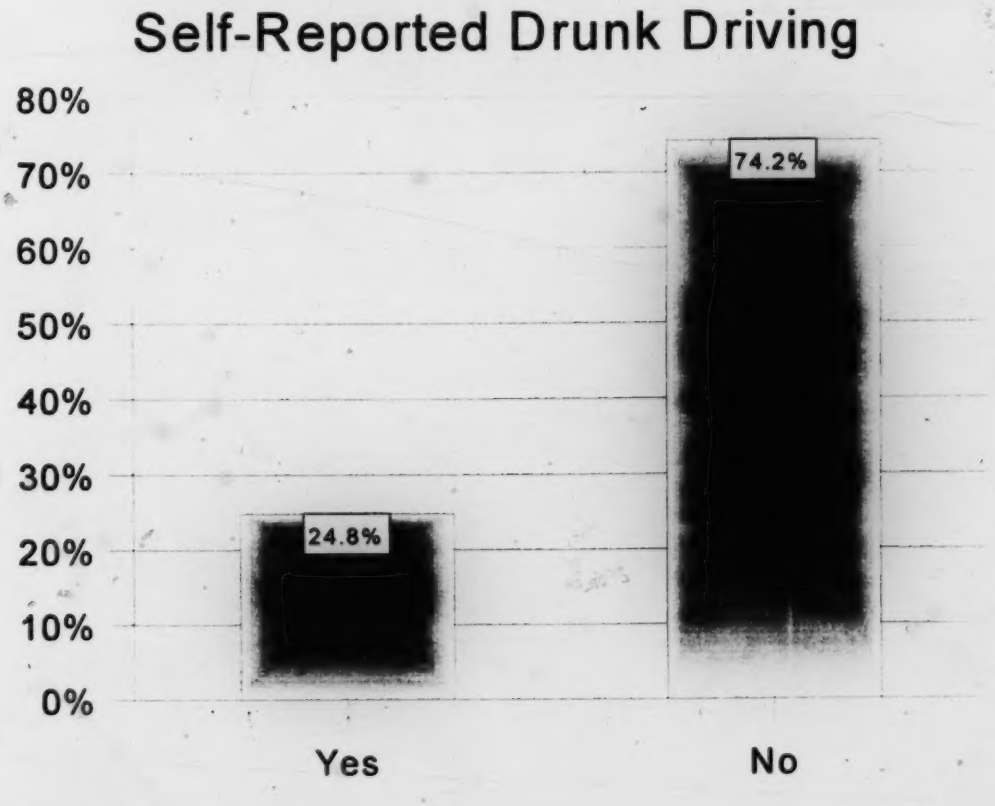
The diversity of sentence lengths and sentence types will prove useful in testing deterrence theory propositions. The variation in prior DUI convictions and the large number of offenders involved in analogous acts will help assess low self-control. A substantial proportion of Aboriginal offenders in the sample will enable us to test chronic stress propositions. Coping resources of employment, education, social support and treatment length again are sufficiently varied to thoroughly evaluate the influence of coping resources.

3.9 Interview Subsample Description

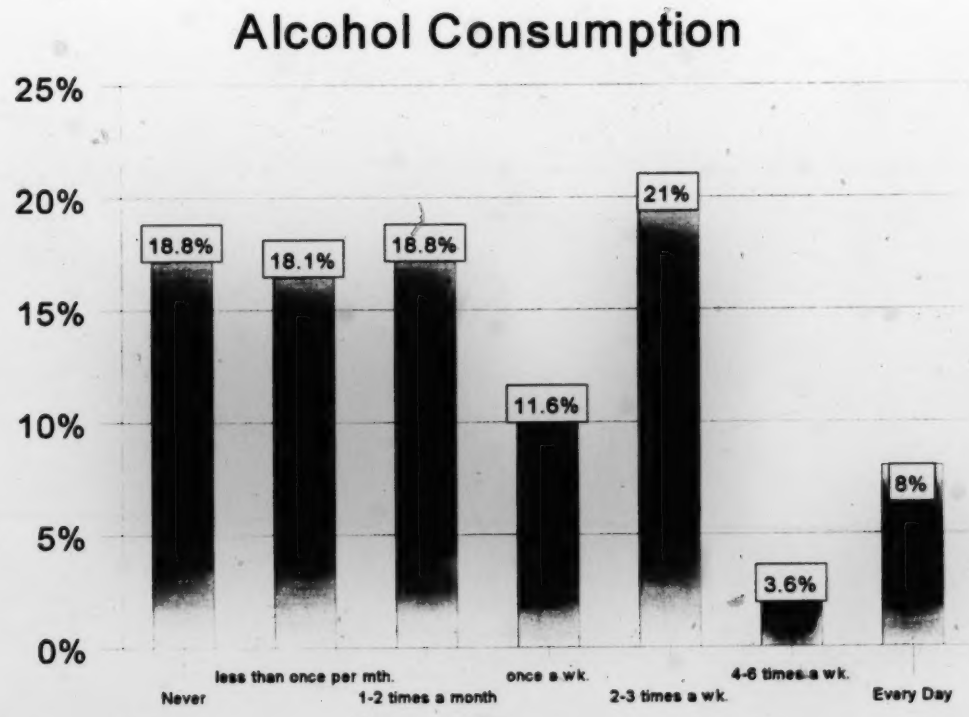
3.9.1 Dependent Variables of Self-Report Drunk Driving Recidivism and Alcohol Consumption

Twenty-five percent (25%) of the survey group admitted to drinking and driving in the twelve months preceding the interview (Graph 3.8). The police formally charged 16 percent, leaving 9 percent of the sample who admitted to undetected drunk driving.

Reported drinking frequency varied considerably (Graph 3.9). Eight percent (8%) of offenders reported drinking every day. Four (4%) drank four to six times a week, while 20 percent drank two to three times per week. Twelve percent (12%) reported



Graph 3.8

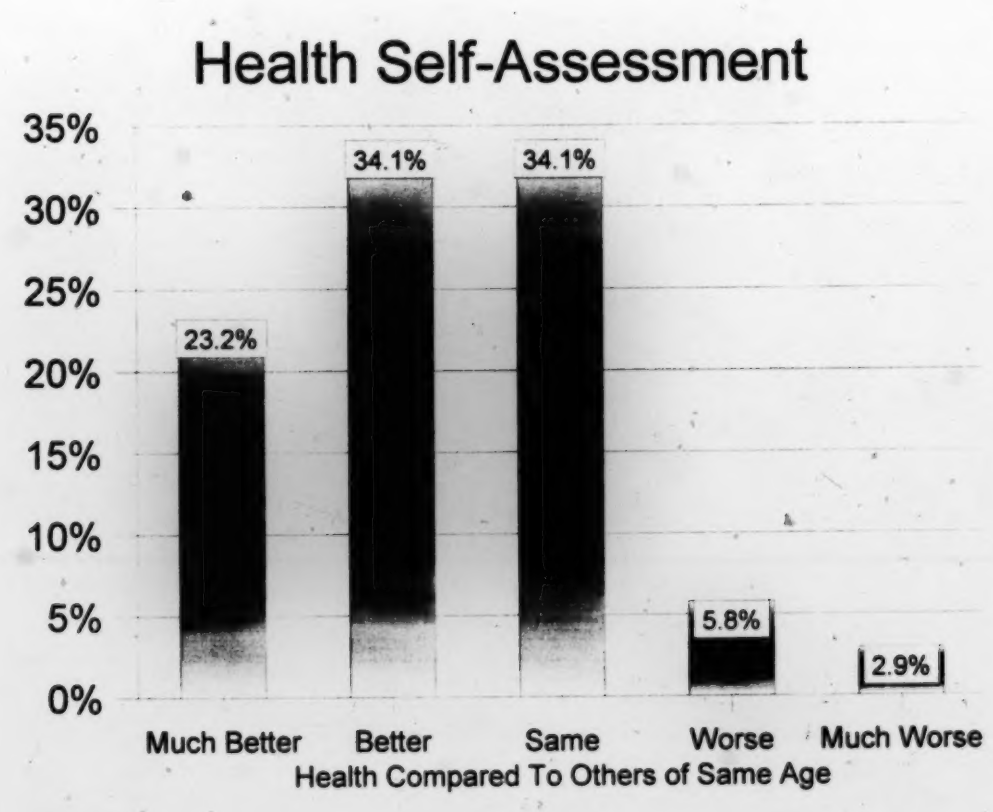


Graph 3.9

drinking only once a week, 19 percent once or twice a month and 18 percent less than once a month. About 19 percent said they were abstainers.

3.9.2 Specific Deterrence, Prior Deviant Behaviours, Stress and Coping Resources

The mean subsample sentence length was 273.5 days (s= 238.3), or about nine months. Sentence ranges were established according to custody terms typically assigned in court. Sentence lengths were distributed across four ranges. Sixteen percent (16%) of respondents served four months or less, 38 percent served just over four months to six months, 27 percent served from six months to one year, and 19 percent served over a year. There were no other measures of specific deterrence.

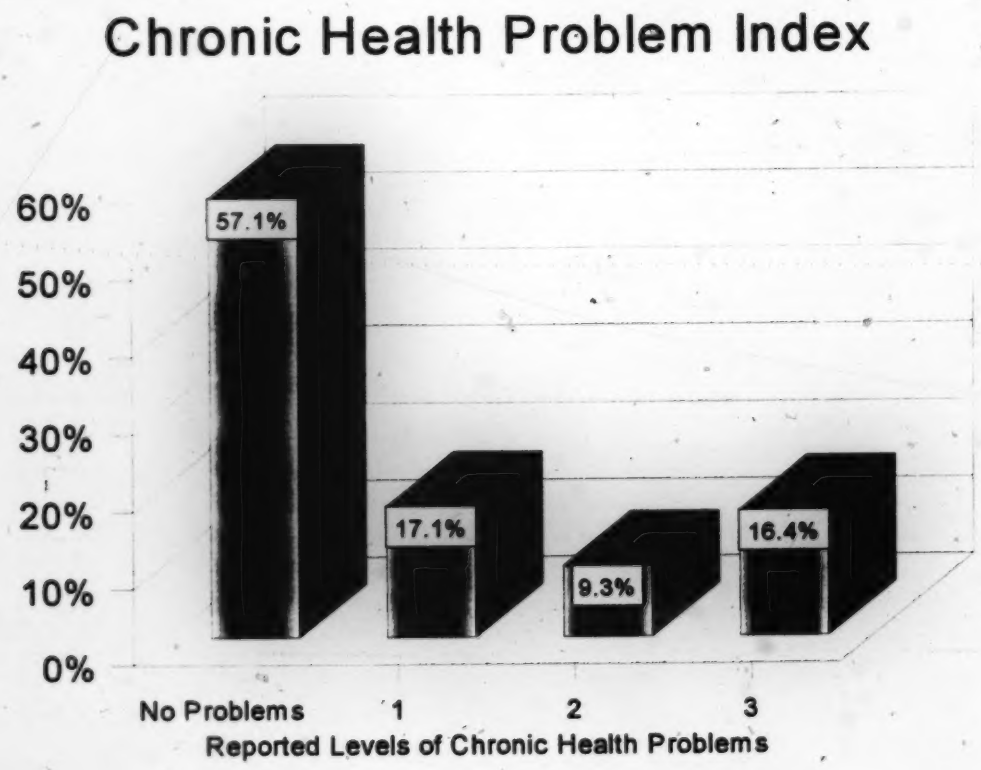


Graph 3.10

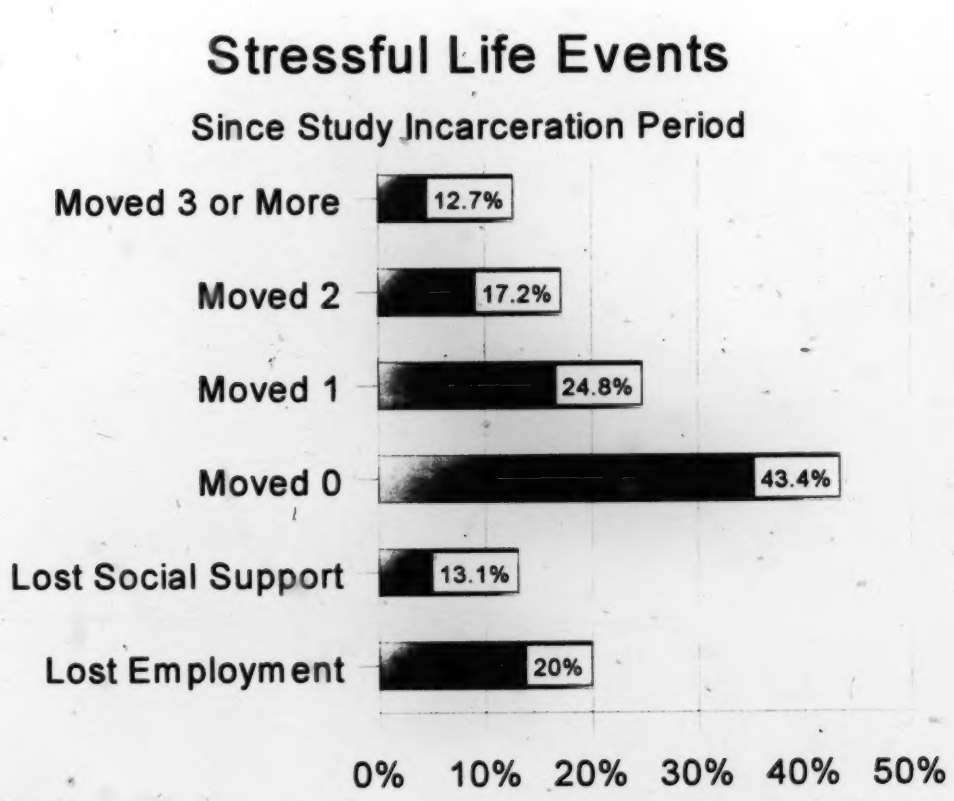
The mean number of prior impaired driving charges was 2.94 (s= 1.84), or about three per driver. Forty-six percent (46%) of impaired drivers had two or less prior DUI convictions. Fifty-five percent (55%) of the subsample had a conviction for another criminal code offence. The average offender age in the subsample was 35.1 years (s= 9.6).

Subsample chronic stress measures included Aboriginal status, physical health, and absence of a driver's licence. Registered Indian and Metis categories were combined into a single Aboriginal category because of their smaller numbers in the subsample. Twenty-nine percent (29%) of respondents were Aboriginal, leaving 71% who were Caucasian.

Fifty-seven percent (57%) of impaired drivers felt their health was better or much better than others. Thirty-two percent (34%) felt their health was about the same, and 9 percent thought their health was worse or much worse (Graph 3.10). A summated variable was created from three chronic health indicators to more parsimoniously assess the effects of ongoing health problems on recidivism and excessive drinking (Graph 3.11). The three variables were based on questions about chronic trouble with pain or discomfort, restriction of activities due to health problems, or limitations on activities due to chronic pain. The summated chronic health variable achieved an Alpha of .82. Using the chronic health indicator, over half the subsample (57%) reported no ongoing physical problems. Seventeen percent (17%) reported some chronic health problems, 9 percent reported



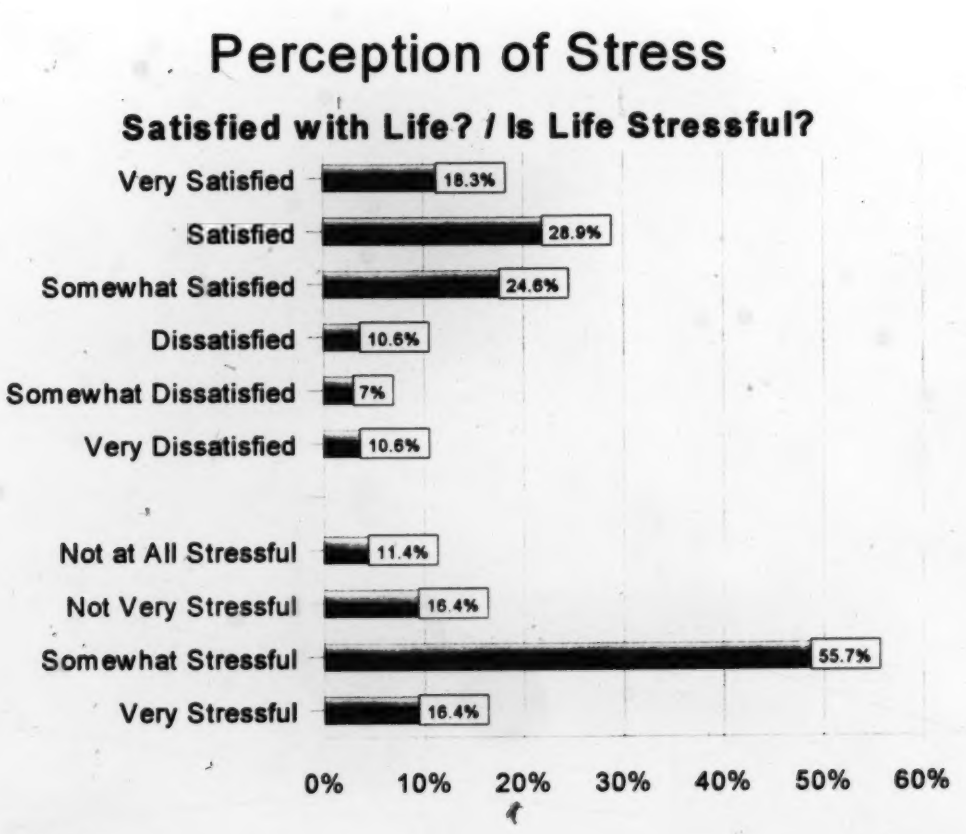
Graph 3.11



Graph 3.12

difficulties, and 16 percent reported considerable hardship (Graph 3.12). Only 11 percent (11%) of the interview group had regained a valid driver's licence.

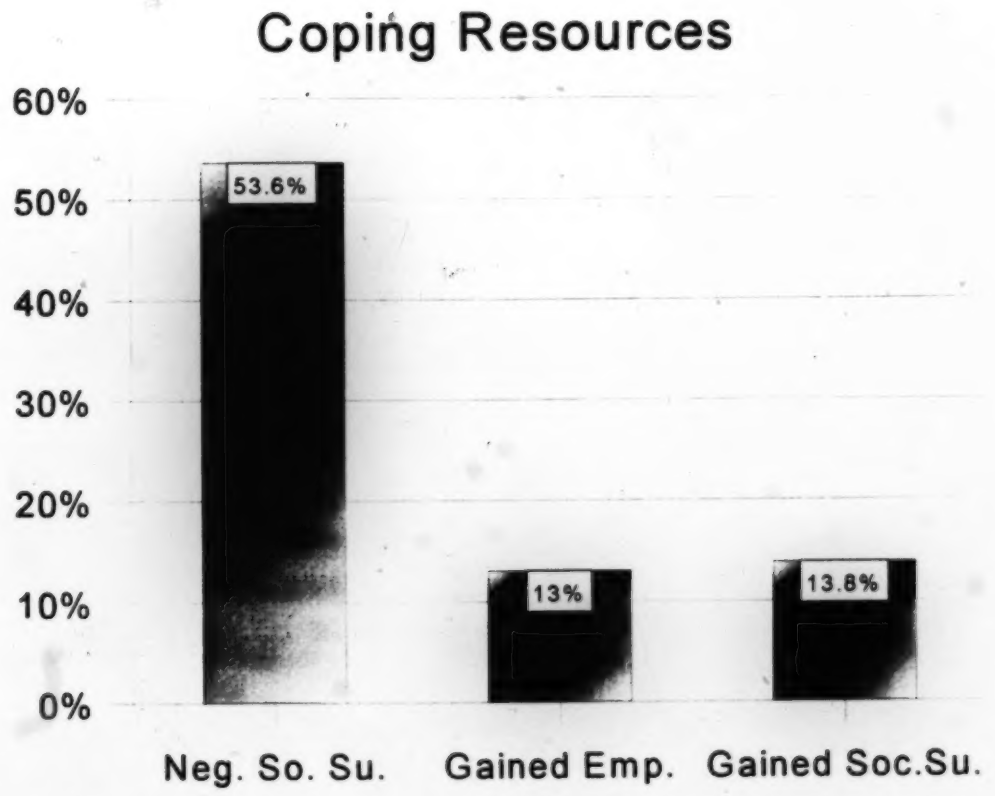
Stressful life events included becoming unemployed, losing social support through separation, divorce or death of a spouse and experiencing a residence change (Graph 3.12). Twenty percent (20%) of respondents had become unemployed since leaving custody. Thirteen percent (13%) of the subsample were no longer married or in a common-law relationship. Forty-four percent of impaired drivers had remained in the same residence over the past two years. Twenty-five (25%) percent had moved once, 17



Graph 3.13

percent had moved twice, and 13 percent had moved three or more times over the past two years.

Perceived stress was measured by questions on stress and life satisfaction (Graph 3.13). Sixteen percent (16%) of the subsample found their lives very stressful, while the majority (56%) found it somewhat stressful. About 28 percent found their lives somewhat or not at all stressful. Less than half of respondents (47%) were satisfied or very satisfied with their lives. Twenty-four percent (25%) were somewhat satisfied while 28 percent were dissatisfied or very dissatisfied with life.

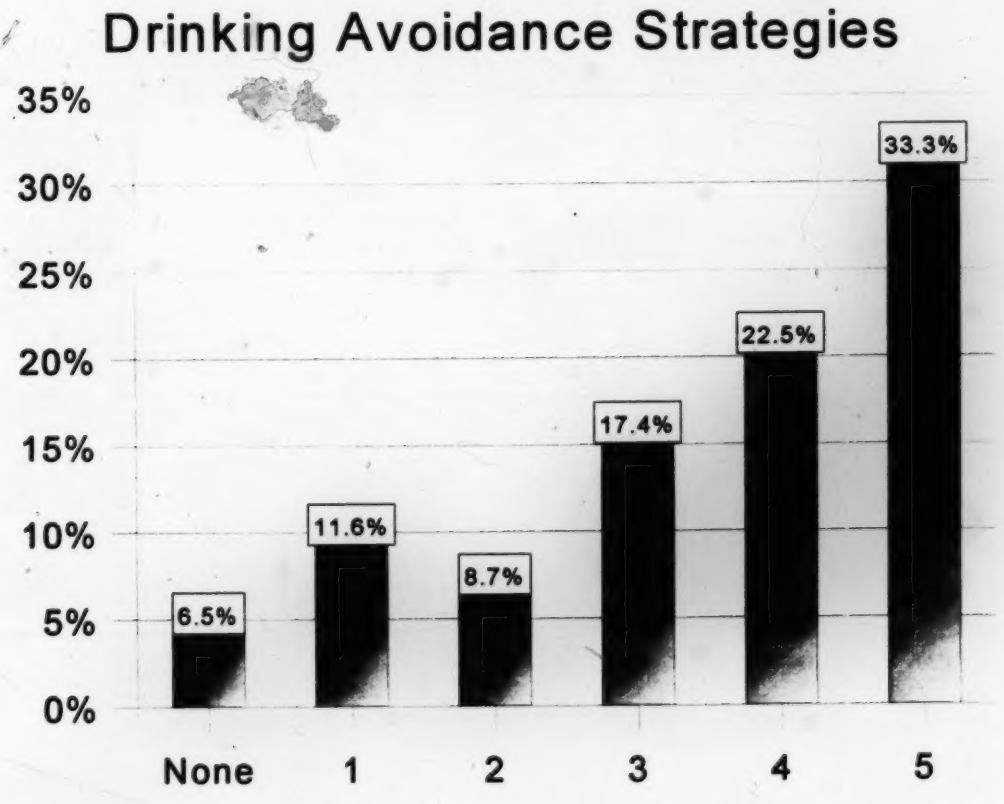


Graph 3.14

Coping resources available to offenders included education, employment, social support, absence of negative social support, maturity, prior treatment, and drinking avoidance behaviours. The average education level of the subsample was 9.8 years with a standard deviation of 1.8. Seventy percent (70%) of offenders reported being employed, 50 percent received social support from a spouse and 53.6 percent received negative social support by riding with a drunk driver in the past year (Graph 3.14). A small proportion of offenders had increased their employment and social support resources since their last incarceration. Thirteen percent (13%) of offenders had become employed and 14 percent were now married or living in a common-law relationship.

Forty-seven percent (47%) of the sample had completed residential treatment before the study's custody treatment period. When incarcerated, 42 percent of the sample had taken two weeks treatment or less, 28 percent took three weeks, 10 percent took four weeks, and 19 percent took six weeks of treatment.

To see what steps impaired drivers may have taken to cut down on alcohol consumption, respondents were questioned concerning five different coping strategies: skipping parties, going to the bar less often, avoiding friends who drink, limiting the number of alcoholic drinks, and avoiding drinking altogether. Responses were used to



Graph 3.15

create a summated variable of drinking avoidance behaviours (alpha= .72). The distribution of this variable shows that 7% of the sample did not do anything to reduce drinking, 12 percent engaged in at least one avoidance behaviour, 9 percent engaged in two, 17 percent in three, 23 percent in four and 33 percent of impaired drivers engaged in all five avoidance behaviours (Graph 3.15).

3.9.3 Summary: Interview Subsample Description

The majority of the subsample (75%) did not report driving drunk in the last year. Considerable variation existed in self-reported drinking behaviour, deterrence experiences, prior deviant behaviours, stressors, stressful life events, and coping resources. Within the interview subsample sufficient variation exists in sentence lengths, prior drunk driving convictions, presence of other crimes, age, Aboriginal status, education, employment and social support to provide for another reasonable test of deterrence, low self-control and strain/stress theory propositions. The interview subsample, however, also offers us many additional measures with which to explore the relationships between drunk driving recidivism and our three theories.

The wide distribution in drinking consumption will enable us to rigorously examine the low self-control trait of pleasure seeking and repeat DUI. The chronic stress of physical health problems and no driver's licence can be tested to assess their relationship with self-reported drunk driving. Three stressful life events can be assessed for their impact on repeat drunk driving including residence change, loss of employment and loss of social support. Two indicators of perceived stress and one of perceived health are available to test stress propositions. Coping resources whose relationship with repeat drunk driving can be evaluated include employment gain, social support gain, negative social support, and a broad array of drinking avoidance strategies.

CHAPTER 4 DUI RECIDIVISM: OFFICIAL RECORDS DATA

4. Introduction and Analysis Plan

The retrospective and interview data sets have different strengths and limitations that shape planned analysis. The retrospective data set is based on official records, and consequently does not provide as many indicators as the self report subsample. Therefore, constructs are not often as well measured as survey responses. The retrospective data set, however, presents several advantages. It includes intermittent and fine default cases that allow a broader assessment of types of deterrence. It also includes a strong range of strain/stress measures such as social resources (Aboriginals), social support (marital status), coping resources (employment, education, treatment programs) and deterrence severity (sentence length, sentence type). The large sample size (N=692) of the retrospective group makes it possible to test for statistical interaction effects, compare effects for sub-groups, and to disaggregate the effects of indicators.

A large number of rich indicators are available in the self report data set, allowing for a more detailed assessment of the effects of strain/stress on DUI recidivism. Indicators of life event stress (employment, marital status changes, residence changes), perceptual stress measures, coping strategies and excessive drinking behaviours all allow for analysis of the stress process, rather than focussing only on the outcome of impaired driving recidivism.

Data analysis will proceed in two phases. First, the analysis of the retrospective data set will be guided by the propositions developed from explanations of drunk driving recidivism. Correlations will be examined to assess bivariate relationships, and logistic regressions (including interactions) will be estimated to examine multivariate effects.

In the second phase of analysis, the interview data set will be used to examine the propositions underlying the model outlined in Figure 2. Again, correlations will be

examined to evaluate bivariate relationships and multiple regression models will be estimated for the effects of stressor and coping resources on alcohol consumption. Logistic regression models (and path analysis constructions) will estimate the direct and indirect effects of stress, as well as direct effects of low self-control and deterrence indicators. Interactions will be explored as the number of cases allow.

4.1 Official Records: Recidivism Results

Twenty-three percent (23%) of the study sample were convicted at least once for a new drunk driving offence. In this chapter, official DUI recidivism will be indicated by the presence of any new drunk driving conviction (coded one or more = 1, none = 0). A large majority of recidivists (117 of 159, or 74%) were reconvicted only once. Given the difficulty in detecting a DUI episode, the total number of new convictions may not reflect the number of times an offender drove drunk. Additional convictions may be due more to random differences in police detection than more prolific drinking and driving.

The limited number of cases in the multiple recidivism categories would have severely hampered analysis using multiple regression, producing unreliable estimates of predictors. Another advantage of using a dichotomous recidivism indicator is that it is amenable to controlled analysis through use of logistic regression (Walsh 1987).

4.2 Risk Factors in DUI Recidivism: Observed Bivariate Associations

Research propositions were assessed by examining bivariate and tabular relationships between DUI recidivism and theoretical indicators of specific deterrence, prior deviance, stress and coping resources. Correlations will establish observed relationships corresponding to our research propositions directed towards explanations of repeat drunk driving. Before examining more complex multivariate analysis that necessitates controls for alternative explanations, it is appropriate to establish observed associations.

The correlation coefficient "r" measures the direction and magnitude of association between two variables. To focus on meaningful effects, analysis of repeat DUI bivariate relationships only considered substantive correlations between predictors and self-reported drunk driving. Only correlations of .10 were reported, because that meant variable A shared at least 1% of its variance with variable B (the square of $r = r^2$, or .10*.10= .01, or 1%). Correlation coefficients were rated as follows:

i) .10 to .14 was considered small;

ii) .15-.18 modest (r^2= 2-3%);

iii) .19-.25 moderate (r^2= 4-6%);

iv) .26-.35 strong (r^2= 7-12%), and;

v) .36 and higher was classified as large (r^2= 13% or more).

A correlation matrix of all predictors and the dependent variable of an official drunk driving conviction is contained in Appendix A.

4.2.1 Specific Deterrence

Impaired drivers who received longer sentences were expected to "feel the weight" of greater specific deterrence and be less likely to drink and drive again (proposition 1). According to this line of reasoning, intermittent and fine defaulters were expected to be at higher risk of recidivism because they received more lenient dispositions (proposition 2).

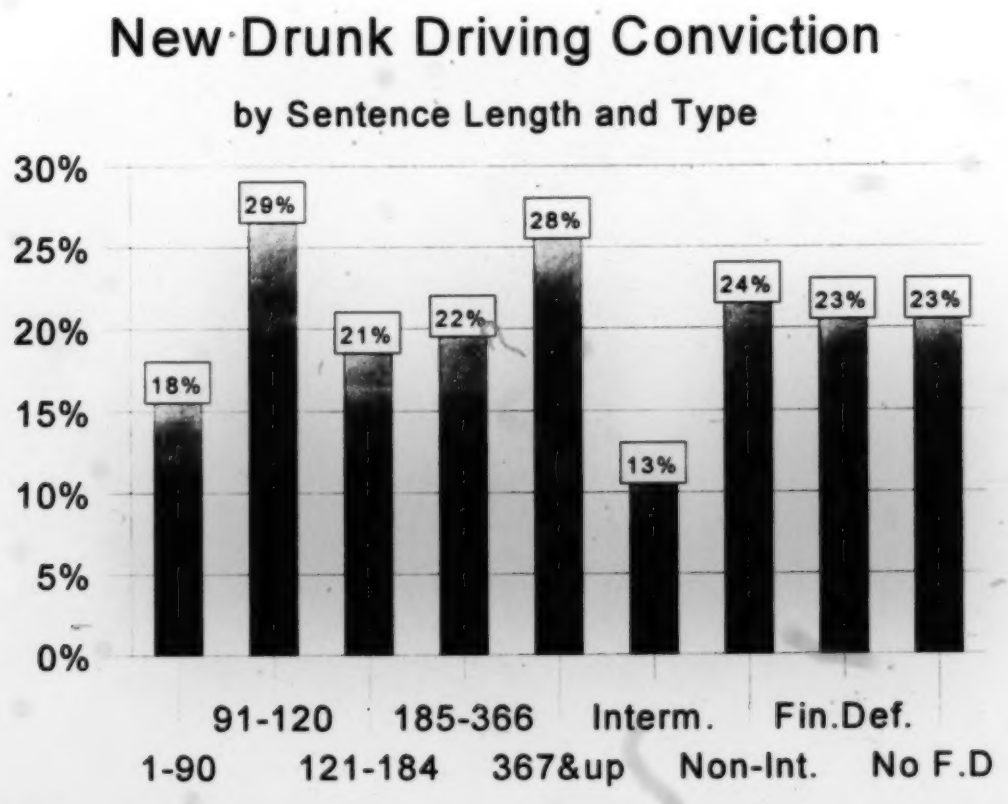
Bivariate correlations for retrospective data showed only weak to modest relationships between specific deterrence measures and drunk driving recidivism (Table 4.1). Sentence length and fine default status showed virtually no linear observed association with recidivism. Intermittent sentences exhibited a very small negative relationship with repeat DUI (r= -.09*), but this association was not in the predicted direction. The negative slope indicated that those who received weekend sentences were less likely to drink and drive again.

Table 4.1 Risk Factors With Repeat Drunk Driving

Variable	r	Variable	r
Specific Deterrence		**Stress**	
Sentence Length	-.01	Registered Indian	.18***
Fine Defaulter	-.01	Métis	-.03
Intermittent	-.09*	**Coping Resources**	
Prior Deviance		Education	-.06
Impaired Driving History	.13***	Employed	.01
Other Crimes	.12***	Social Support	.09*
Age	-.12***	Residential Treatment	.20***
		Treatment Length	.25***

N= 692 ***p<.001, **p<.01, *p<.05 (two-tailed).

Offenders serving ninety days or less were least likely (18%) to drink and drive again (Graph 4.1). Those serving around four months were the most likely category to recidivate (29%). Recidivism declined to 21 percent at six months, increased to 28 percent at about a year, and declined again to 22 percent for offenders serving over a year in custody. Similarly to bivariate correlations, cross-tabulation of drunk driving recidivism with sentence length categories also demonstrated no significant association. (Graph 4.1, X^2= 7.18, 4 df). Fine defaulters recidivated at a rate of 23 percent, and showed no appreciable differences from rates observed for other impaired drivers (Graph 4.1, X^2= .01, 1 df). About 13 percent of intermittent servers drank and drove again, which gave them about half of the recidivism rate (24%) of straight sentenced impaired drivers (X^2 =5.76*, 1 df).



Graph 4.1

Observed bivariate relationships did not provide any support for propositions one and two. Longer, more severe sentences, and less stringent fine default and intermittent sentences did not appear to directly discourage (or encourage) repeat DUI.

4.2.2 Prior Deviant Behaviours and Age

Low self-control theory propositions postulated that offenders with more prior impaired driving convictions and who were involved in analogous acts (other crimes) would be more likely to drink and drive again (proposition 3). According to the general theory of crime, offenders were also less likely to drink and drive again as they became older (proposition 4). Repeat drunk driving increased with the number of prior

convictions, but this relationship was not perfectly linear (Graph 4.2, $X^2 = 16.85^{***}$, 3 df). Impaired drivers with no priors recidivated at the lowest rate (15%), while those with five or more previous DUI convictions reoffended at the highest rate (37%). In the ranges of one to two (22%) and three to four (21%) prior impaireds, drunk driving recidivism occurred for one in five offenders. The lack of linearity indicates that DUI recidivism is not a simple function of prior behaviour. There may be phases in the "drunk driving career" when persistence may be affected by other factors, such as life events, justice system interventions or treatment experiences.

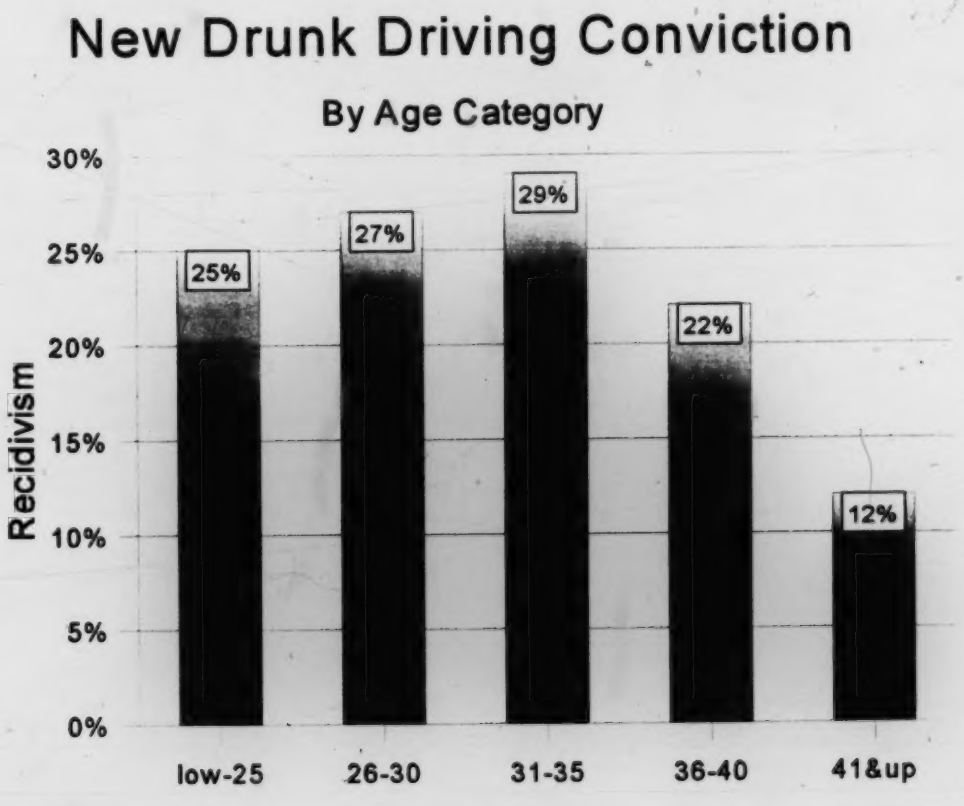
Expressing recidivism as odds, drunk drivers who committed other crimes (analogous acts) were substantially more likely (29/18, or 1.61 times) to drink and drive again (Graph 4.2, $X^2 = 10.43^{***}$, 1 df). As age increased, the likelihood of recidivism increased, then decreased in middle age (Graph 4.3, $X^2 = 13.81^{**}$, 4 df). Recidivism increased only slightly (1.8%) between the youngest age group (18-25 years) and the slightly older cohort of 26-30 years. Reoffence was only 2 percent greater in the 31-35 age group. Over the age of thirty-five, however, there was a noticeable drop in DUI recidivism, from 29 percent to 22 percent and offenders forty one years and older showed by far the lowest recidivism rate (12%). Thus, although age appears negatively correlated to recidivism, an "aging out", or maturing effect (coping resource of increasing life experience) was not evident until the upper middle to late thirties. Still, only one in ten impaired drivers aged forty-one and older were detected drinking and driving again, and this rate is not trivial. Despite a somewhat delayed reduction in risk, the age effect on DUI recidivism is consistent with the general theory of crime. As a coping resource,

maturity may not be accurately measured by age itself. Age may not lead to improved life decisions until a threshold of substantial experience is achieved.

Bivariate and tabular relationships provide partial support for propositions three and four. Offenders with low self-control (more prior DUI and analogous acts) appear more likely to drink and drive again, while a decline in official recidivism is evident for offenders older than age forty.

4.2.3 Stress and Coping Resources

It was proposed that Aboriginals might be more likely to drink and drive again because their lack of resources would lead to more stressful life situations generally (proposition 8). Observed associations between repeat drunk driving and Aboriginal

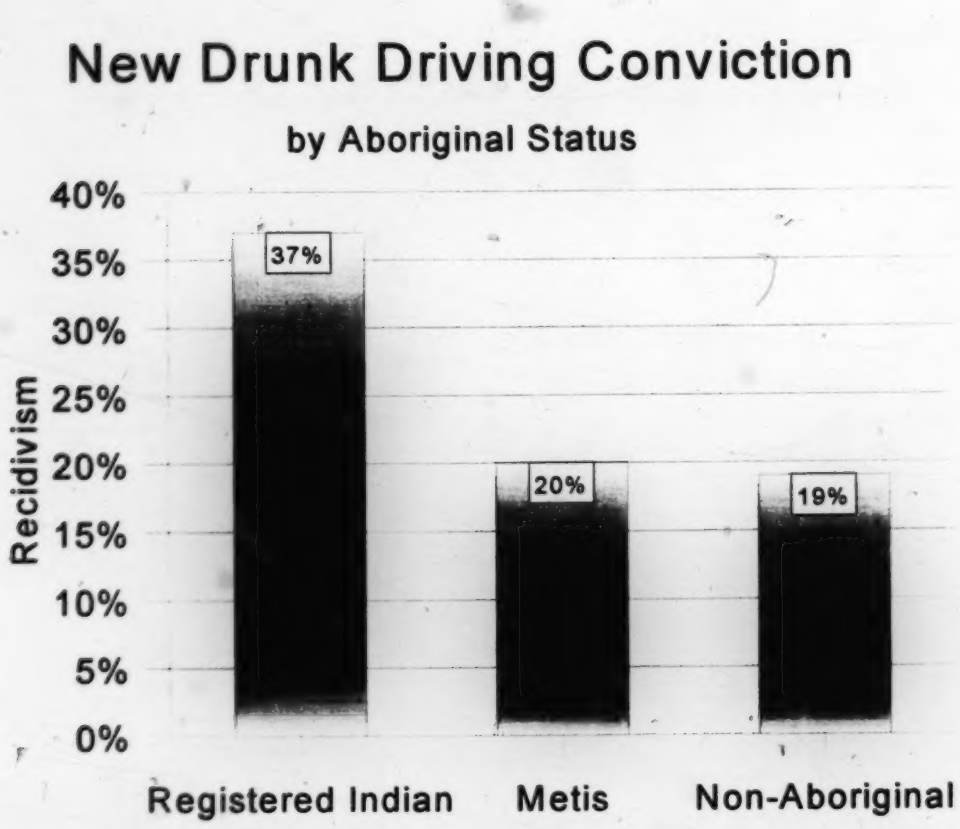


Graph 4.3

status, however, were mixed (Table 4.1). Registered Indian status had only a modest correlation with recidivism (r=.18***) and Registered Indians were almost twice as likely as others in the sample to drink and drive again (Graph 4.4, odds of 37/19=1.94). There was no apparent relationship between Métis status and repeat DUI. Métis offenders were only slightly more likely to drink and drive again (20/19= 1.05) than Non-Aboriginal offenders.

Coping resources such as education, employment and having social support through marriage or a common-law relationship were expected to reduce the probability of recidivism. However, there was no apparent impact on recidivism by reducing stress or enhancing its management (proposition 7). Observed effects were again small or negligible, and some correlations were counter to the predicted direction. Education had a weak negative effect on recidivism and employment showed no association with repeat DUI. Contrary to predictions, marital status actually had a weak effect in a positive direction.

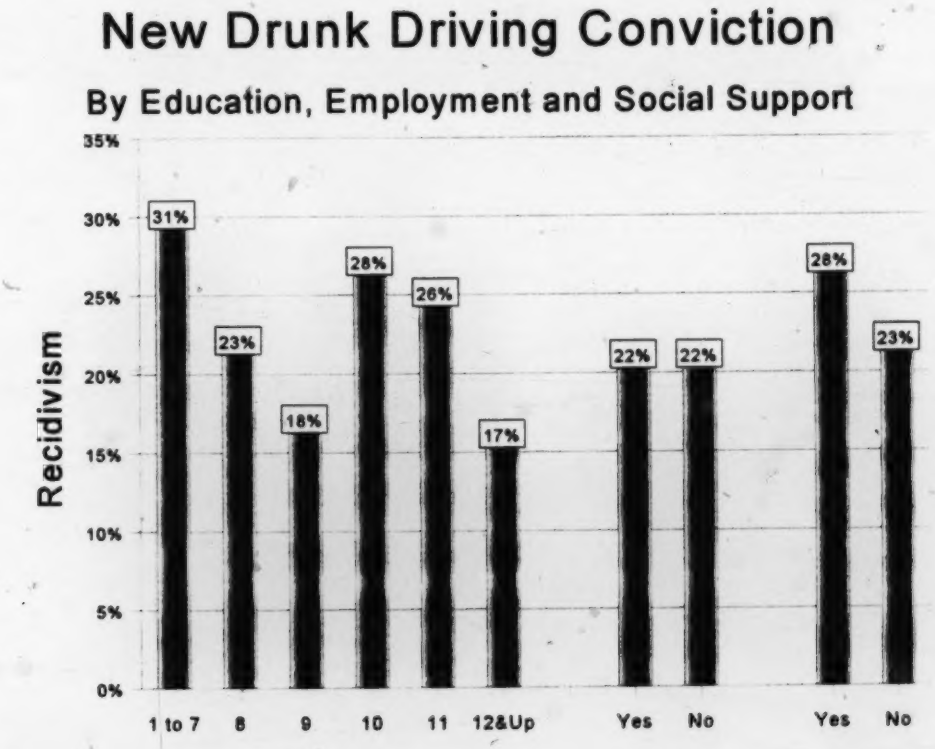
Measured against reoffence, education was collapsed into five categories (Graph 4.5). There was no significant relationship with DUI recidivism. Those with the least education, however, were the most likely to persist in drunk driving, while those with the most education were least likely. Impaired drivers with grade seven or less recorded the



Graph 4.4

highest recidivism rate of 31 percent, while those with grade twelve and up showed the lowest rate of 17 percent. From grades eight to eleven repeat drunk driving fluctuated from 18 percent to 28 percent.

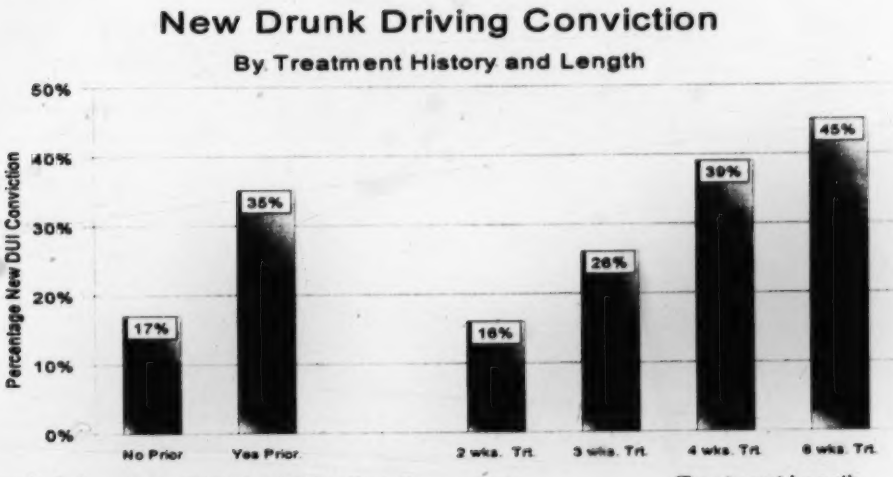
Those reporting unemployment when admitted to custody recidivated at a rate of 22 percent, a rate identical to those who reported being employed. Twenty-seven percent (27%) of drunk drivers who were married or common-law drank and drove again, a rate only 7 percent higher than those single, separated or divorced (Graph 4.5, $X^2 = 5.11^*$, 1 df). Thus, employment did not seem to assist drunk drivers in avoiding recidivism, while the presence of a significant other actually appears be associated with an increased



Graph 4.5

likelihood of recidivism. Results showed no support for proposition seven, with the exception of the maturing effect of age.

As prior treatment increased, stress theory predicted that recidivism would decrease (proposition 10). Observed correlations between treatment and DUI recidivism were moderate, but they had the opposite sign to that predicted (r=.20***). Indeed, offenders who had attended prior residential treatment were twice as likely to recidivate. They engaged in repeat DUI at a rate of 35 percent, compared to 17 percent for those with no previous intensive program (Graph 4.6, X^2 =24.49***, 1 df). The likelihood of repeat DUI also increased with the length of treatment (r=.25,***). Those who reported



Graph 4.6

taking treatment of two weeks or less recidivated at a rate of 16 percent. Those attending three weeks reoffended at a rate of 26 percent and participation in four weeks of programming resulted in 39 percent repeat DUI. Finally, 45 percent of impaired drivers who undertook six weeks of treatment were reconvicted of drunk driving (Graph 4.6, X^2 =43.61***, 3 df).

4.2.4 Observed Risk Factors in DUI Reoffence

Intermittent sentence type, prior deviance and age, official Registered Indian status, social support and treatment coping resources all showed small to modest associations with recidivism. Sentence length and fine default status, Métis status, education and employment were not associated with repeat DUI. As predicted, Registered Indians, perhaps because of their more stressful social circumstances, were more likely to drink and drive again. Métis offenders were only slightly more likely than Non-Aboriginal offenders to recidivate, and did not appear nearly as likely as Registered Indians to drink and drive again. Métis offenders may not experience the same stress as Registered Indians, because of the indirect influence of other social factors such as employment, education, or social support.

Bivariate correlations confirmed the association of prior deviant behaviours and DUI. However, the strength of the relationships were less than anticipated. None of the correlations between prior drunk driving, other crimes and repeat DUI were larger than .13. As expected, the rate of repeat DUI declined with age, but the decrease in recidivism was strongest after age 40, suggesting a "threshold" effect.

Not all observed associations were as predicted. Drunk drivers did not appear to be directly deterred by the length of their sentences. The effects of sentence length could be confounded by the large number of offenders serving sentences for other crime convictions. Experienced and persistent offenders may not be influenced by longer sentences.

Contrary to predictions, intermittent servers were less likely to recidivate, while treatment had a positive association with repeat DUI. Effects opposite to what were expected for weekend servers and treatment regimes may be explained by selection effects. Intermittent servers may be selected by the judiciary for less punitive treatment because they are more likely to avoid further DUI. Coping resources of prior and current treatment may reflect higher rates of problematic drinking or alcoholism. Offenders taking the most treatment are likely those with the most severe alcohol abuse problem. If this alcohol treatment is of limited effectiveness, those taking the most treatment may have elevated failure rates.

4.3 Multivariate Analyses

4.3.1 Use of Logistic Regression

My research propositions were further tested using statistical controls for alternative explanations. Because the dependent variable is dichotomous, logistic regression was used. Use of ordinary least squares regression with a binary dependent variable would produce biassed estimates of regression coefficients. Logit offers several

advantages. In sociological research, many variables of interest are dichotomous in nature (e.g., recidivism, reoffended or not). In addition, logistic regression is well suited to simplifying non-linear relationships and in the last ten years has often been favoured over ordinary least squares regression, particularly in situations where the dependent variable is dichotomous (Walsh 1987). One of the greatest strengths of logistic regression is its ability to communicate multivariate results to individuals without a strong statistical background, including laypersons and those in government.

Interpretation of logistic regression is relatively straight-forward. Logistic regression predicts the odds of an event's occurrence. The odds are defined as the observed ratio of the probability that an event will occur versus the probability it will not occur. For example, the odds of randomly pulling a diamond out of a deck of cards is 13/39 or 1/3. In a logistic regression equation, the odds of an event such as drunk driving occurring are estimated adjusting for the effects of a number of control variables. The odds of an event (drunk driving conviction) occurring if an individual indicator variable has a particular score on a "risk" independent variable (such as Registered Indian status) is expressed, net of the effects of other predictors in the equation.

In the following equations the most useful statistic to consider is the exponent of b, the partial regression coefficient (expressed on logarithmic scales). The exponent of b, or Exp(b), expresses the odds of the drunk driving event happening or not happening. In Table 4.2, the dichotomous indicator variable of Registered Indian status (1=yes, 0=no) has a partial regression coefficient of b=.400. The exponent of b (exp@.400) is 1.491, which means that, net of the effects of other indicators, being a Registered Indian increases the odds of repeat DUI by 1.491. The null hypothesis of no association is indicated by log odds of 1.00, where both the binary outcomes are equally likely.

In the case of a continuous variable such as prior impaired driving, the interpretation of the exponent of b differs slightly. In Table 4.2, the observed partial

regression coefficient for impaired driving is b= .101, and the exponent b= 1.106. This means that for each additional prior drunk driving conviction, the odds of a new drunk driving conviction increase by .106. For someone with three prior convictions, the odds of reoffence are predicted to be 1.318 (3*10.6).

Negative coefficients have a different interpretation, as they estimate the odds of an event not occurring. For example, in Table 4.2, intermittent servers have a negative relationship with repeat DUI (b= -.612), which gives an exponent of b= .542. To calculate the odds so as to interpret these results, we estimate the reciprocal of b. The Exp(b) must be divided by one (1/.542= 1.845), indicating that being an intermittent server decreases the odds of drinking and driving again by 1.845.

To assess the reliability or consistency of the partial regression coefficient effect, the Wald statistic is reported. It can also be used for hypothesis testing, as the Wald statistic assesses the probability that the observed coefficient would be observed due to random error if the ratio was 1.0 (null hypothesis value). For a categorical variable, the Wald statistic is simply the square of the regression coefficient divided by its standard error. As a rough rule of thumb, the Wald can be interpreted in an analogous fashion to the t statistic, and if its value falls below 2.0 the coefficient value can be presumed not to have a significant effect. Reported probabilities reflect one-tailed tests.

For example, in the case of Registered Indian status, the observed value of the Wald statistic is 2.654, indicating modestly reliable effects. This is consistent with the regression coefficient's significance level of *p<.10. Prior impaired driving shows a Wald of 3.541, again fairly modest. A larger Wald is observed for Prior Treatment Length effects (11.023), indicating a more reliable effect (i.e., a lower probability that the effect occurred by chance).

4.3.2 Main Effects

The dependent variable, any new drunk driving conviction, was regressed on indicators of specific deterrence, prior deviant behaviours, stress and coping resources and the control variable "year of treatment" (Table 4.2). The observed logistic model fit the data reasonably well (Goodness of Fit X^2= 687.994, 14 df, pseudo R^2= .50).

Based on deterrence theory, it was proposed that longer sentences would discourage repeat drunk driving (proposition 1), and that the more lenient dispositions of intermittent status and fine default would result in higher recidivism rates (proposition 2). Results provided some support for the effects of specific deterrence. Whereas virtually no zero order effect was observed, as sentence length (in days) increased, the odds of DUI recidivism decreased (Exp(b)= .998, Wald= 6.148). Where the other factors were controlled, the coefficient for fine default status also showed a slope in the predicted direction, but effects were small and unstable (Exp(b)= .409, Wald= 1.069). Intermittent servers were actually *less* likely to recidivate by a factor of 1.85, displaying a modestly reliable effect that was directly contrary to predictions (Exp(b)= .542, Wald= 2.557). Overall, however, sentence *type* did not exert a large influence on the odds of DUI recidivism. The actual *length* of sentence had a stronger effect on repeat drunk driving. Compared to observed zero order effects, the partial effects of sentence length were much larger and consistent, while the introduction of controls did not change the direction or magnitude of effect appreciably for intermittent status. In both bivariate and controlled analysis, the odds of repeat drunk driving declined approximately by a factor of 1.85 for intermittent servers. Fine default status exerted a negligible zero order effect on DUI recidivism, while net of the effect of other predictors, fine default status showed a positive but weak effect on repeat DUI.

Table 4.2 Logistic Regression for New Impaired Driving Conviction

Variable	B	St. Error	Wald	EXP(B)
Sentence length (1,2,3...)	-.002***	.001	6.148	.998
Fine Defaulter (1=yes, 0=no)	.324	.332	1.069	1.409
Intermittent Server (1=yes, 0=no)	-.612	.383	2.557	.542
Prior Drunk Driving (0,1,2...)	.101*	.054	3.541	1.106
Other Crimes (1=yes, 0=no)	.322	.212	2.320	1.380
Age (1,2,3...)	-.030**	.013	5.606	.971
Registered Indian (1=yes, 0=no)	.400*	.245	2.654	1.491
Métis (1=yes, 0=no)	-.201	.342	.346	.818
Education (1, 2, 3...)	-.016	.055	.082	.984
Employed (1=yes, 0=no)	.365	.228	2.570	1.441
Social Support (1=married or common-law, 0=single, divorced or widowed)	.206	.202	1.034	1.228
Prior Residential Treatment (1=yes, 0=no)	.729***	.220	11.023	2.073
Treatment Length (0=2wks, 1=3wks., 2=4wks., 3=6wks.)	.476***	.100	22.818	1.609
Time Since Treatment (0=1989, 1=1990, 2=1991)	-.800***	.261	9.417	.450
Constant	-.359	.823		

N=692 Goodness of Fit X^2= 687.994, 14 df Pseudo R^2= .50 ***$p<.01$, **$p<.05$, *$p<.10$.

Some support was observed for propositions three and four, which held that prior impaired driving and other crime convictions would lead to greater recidivism, and that recidivism would decrease with age. In estimates reported in Table 4.4, significant but small effects in the predicted direction were observed for prior drunk driving (Exp(b)= .101, Wald= 3.541), other crimes (Exp(b)= 1.380, Wald= 2.320), and age (Exp(b)= .971, Wald= 5.606). Offenders with more prior DUI convictions, who had committed other crimes, and who were younger were more likely to recidivate. Odds of DUI recidivism increased by a factor of 1.11 for each past impaired driving conviction. Impaired drivers convicted of other crimes had recidivism odds increase by 1.38. However, this small effect was only moderately stable (Wald= 2.320). Generally, effects were consistent with observed zero order correlations.

Aboriginal status was expected to increase the odds of repeat DUI (proposition 8). When Non-Aboriginals (almost all Caucasian) were used as the reference category, only modest support was found for this proposition. Registered Indians had odds of recidivism increase by a factor of 1.49 compared to Non-Aboriginals (Exp(b)= 1.491, Wald= 2.654), while Métis offenders showed no appreciable difference from Non-Aboriginals (Exp(b)= .818, Wald=.346). Compared to the observed zero order effects, the risk of reoffence for Registered Indian status appeared to decrease slightly when other factors were controlled. The zero order tabular analysis showed Registered Indians as 1.90 times as likely to reoffend, while in the regression they were 1.5 times more likely to recidivate. The observed weak negative effects of being Métis were replicated in the controlled analysis.

Coping resources of education, employment and social support were expected to assist offenders in avoiding stress, and reduce the likelihood of drunk driving recidivism (proposition 7). Results showed little support for this proposition. Neither education level (Exp(b)= .984, Wald= .082) nor employment appeared to reduce the risk of recidivism. In fact those employed (and who perhaps could afford to drive) had odds of

recidivism increase by a factor of 1.44 (Exp(b)= 1.441, Wald=2.570). There also was no difference in the odds of drunk driving for those married or common-law compared to those single, divorced or widowed (Exp(b)= .234, Wald= 1.228).

Increased treatment was expected to decrease the odds of recidivism (proposition 10). Again, no support was found for this proposition. In fact, treatment coping resources had relatively strong (partial) effects in the direction opposite from what was predicted. As the amount of treatment increased, so did the odds of drunk driving recidivism. Offenders who had previously received residential treatment were twice as likely to drink and drive again (b= .729, Wald= 11.023). To test the effects of treatment length, offenders receiving the least treatment (two weeks or less) were used as the reference group for the other three treatment categories. For each increase in the level of treatment, recidivism odds increased by a substantial factor of 1.61 (Exp(b)=1.609, Wald= 22.818). This means an impaired driver who took the most treatment (six weeks) had recidivims odds increase by a factor of 2.8, compared to an offender who took the least treatment (two weeks or less). Generally, treatment effects in the multivariate analysis were similar to those observed in bivariate correlations and tabular analysis. Prior residential treatment increased the odds of recidivism by 2.1 in tabular analysis, while the risk was somewhat higher (2.8) after controls were introduced in the logistic regression. Overall, controlling for other factors did not change appreciably the effects of treatment on repeat DUI.

To summarize these observations, results provided partial support for proposition one, but did not support proposition two. As sentence length increased, drunk driving decreased moderately. Fine default status did not appear to impact recidivism, while intermittent servers were less likely to drink and drive again. Propositions three and four received consistent support. Low self-control demonstrated by prior drunk driving and other crimes increased the likelihood of DUI recidivism, while older impaired drivers were less likely to drink and drive. As offenders grew older, the odds of repeat drunk driving

decreased. Stress related to Registered Indian status increased the probability of recidivism, supporting proposition eight. Métis offenders, however, were not more likely to recidivate than Non-Aboriginals. Coping resources of education, employment, and social support did not appear to assist offenders in avoiding repeat DUI (proposition 7). Age (maturity) was the only "resource" that lowered the probability of recidivism, also providing support for proposition four. Increased treatment substantially increased the likelihood of impaired driving recidivism, contrary to proposition ten.

4.3.3 Specific Deterrence Threshold

Tittle and Logan (1973) have suggested that specific deterrence research should take into account the possibility of severity thresholds, or "tipping effects". In other words, the deterrent effect of punishment severity may not be linear, but may plateau after a certain level of punishment is reached. The possible existence of sentencing thresholds was assessed by estimating a logistic regression with three dummy variables for sentence lengths: sentence120= 91-120 days, sentence184 =121-184 days, and sentence366= 185-366 days). These three variables represented sentences of approximately three months, four months, six months and a year. Sentences longer than 367 days made up the reference category. The final regression model was estimated without the five cases serving 90 days or less of straight time, making fine default and intermittent sentences "stand alone" categories (N=687).

Results provided some support for the concept of a deterrence threshold (Table 4.3). Net of the effect of other predictors, offenders serving 91-120 days had the odds of reoffence increase by a factor of 2.2, (Exp(b)= 2.150, Wald= 5.233). Effects for sentences of four-six months and six-twelve months were in the predicted direction, but were weak and unstable.

Net of the effects of other predictors, fine defaulters had the odds of recidivism increase by a factor of 2.4 (Exp(b)= 2.422, Wald=5.000). Intermittent servers showed no

relationship to recidivism in this equation (Exp(b)= -.913, Wald= .046). Employment's effects also changed in the equation, exhibiting a slightly stronger and more stable effect on recidivism (Exp(b)= 1.516, Wald=3.296). This was opposite to what was

Table 4.3 Logistic Regression for New Impaired Driving Conviction with Sentence Length Categories

Variable	B	St. Error	Wald	EXP(B)
Sentence 91-120 days	.766**	.335	5.233	2.150
Sentence 121-184	.169	.324	.271	1.184
Sentence 185-366	.321	.314	1.045	1.379
Fine Defaulter	.885**	.396	5.000	2.422
Intermittent Server	-.091	.423	.046	.913
Prior Drunk Driving	.089*	.053	2.860	1.093
Other Crimes	.289	.212	1.857	1.335
Age	-.030**	.013	5.592	.971
Registered Indian	.368	.246	2.238	1.445
Métis	-.136	.344	.157	.873
Education	-.017	.055	.095	.983
Employed	.416	.229	3.296	1.516
Social Support	.240	.203	1.406	1.272
Prior Residential Treatment	.681***	.219	9.697	1.975
Treatment Length	.464***	.101	21.110	1.590
Time Since Treatment	-.846***	.268	9.965	.429
Constant	-1.011	.898		

N=687 Goodness of Fit X^2= 686.447, 16 df Pseudo R^2= .50 *$p<.10$, **$p<.05$, ***$p<.01$.

predicted, as it had been anticipated that those who were employed would be less likely to drink and drive again.

The available evidence suggests that a "tipping effect" or deterrence threshold was achieved at the point where the sentence was increased to over four months. There were no additional substantive specific deterrent gains made from sentences longer than six months. Fine default status also increased the likelihood of recidivism, although it cannot be concluded from the data available that the effect is distinct from sentence length. In the first equation, sentence length had a negative effect on recidivism, while net of the sentence length effect and other risk factors, fine default status did not substantively affect recidivism. Controlling for other risk factors, intermittent sentence servers were no more likely to recidivate than offenders in the reference category (serving more than a year). This "non-finding" is itself quite important, as it indicates that longer custody may not be any more effective than an intermittent sentence for certain offenders.

The equation with the dummy variables for sentence length was rerun with fine default removed and "less than 90 days" substituted as a category (results not shown). The effects of this revised sentence length category were larger and more stable than the effects observed for fine default status (Exp(b)= 2.963, Wald= 6.100). The negative effect for intermittent status was strengthened somewhat, while effects for sentence category variables and other predictors were very similar. These results suggest that the specific deterrent effect of sentence length and the selection effect of intermittent sentence status exert a moderate influence on DUI recidivism, while fine default status has little or no influence on repeat drunk driving.

4.3.4 Interaction Between Aboriginal Status and Coping Resources.

It was speculated that Aboriginal offenders might be affected more strongly by stress, and be more likely to recidivate because they have fewer social resources (proposition 9). To examine this proposition, six interaction terms were created for both

Registered Indian and Métis offenders with variables that represented social resources (less education, unemployed, not married or common-law). Since many Aboriginal youth on rural Reserves are required to attend public (off-reserve) schools beyond elementary school, completion beyond grade eight appeared to be a plausible cutting point for a dichotomous education variable (Grade 8 and less =1, 0=Grade 9 and more). Registered Indians numbered one hundred and sixty-one in the sample. Those with grade eight or less totaled fifty-one cases, about a third.

Two of the interaction terms had notable effects in the predicted direction (Table 4.4). Registered Indians with grade 8 or less had the odds of DUI recidivism increase by a factor of 3.8 (Exp(b)= 3.8, Wald= 7.806). Unemployed Métis offenders had reoffence odds increase by a factor of 5 (Exp(b)= 5.084, Wald= 5.109). Other interactions produced only small, unreliable effects. The main effects of specific deterrence and prior deviance indicators generally retained both magnitude and direction of effects after interactions were introduced. The major exception was employment, whose effects increased in size and stability of effect. Being employed increased recidivism odds by a factor of two (Exp(b)= 2.078, Wald= 4.752). The main effect for Registered Indian status became weak and unreliable with the introduction of the interaction terms (Exp(b)= 1.159, Wald=.163).

The interaction terms provide some support for proposition nine. Low coping resources appeared to be a larger problem for Aboriginals than Non-Aboriginals. Being less educated increased the likelihood of repeat drunk driving for Registered Indians, and unemployment increased the likelihood of DUI recidivism for Métis offenders. Non-Aboriginals were less impacted by low education and actually appeared more likely to drink and drive when employed. Low education and unemployment may be particularly disadvantageous to Aboriginals because of their general lack of resources and marginal position in society. Registered Indians who complete more than grade eight may become

Table 4.4 Exploration of Aboriginal and Stress Interactions

Variable	B	St. Error	Wald	EXP(B)
Sentence length	-.001**	.001	4.240	.999
Fine Defaulter	.389	.336	1.334	1.475
Intermittent Server	-.614	.389	2.490	.541
Prior Drunk Driving	.099*	.055	3.226	1.104
Other Crimes	.394*	.216	3.320	1.482
Age	-.027**	.013	4.544	.973
Registered Indian	.147	.364	.163	1.159
Métis	-.575	.621	.858	.563
Education	.080	.072	1.260	1.084
Employed	.732**	.336	4.752	2.078
Social Support	.113	.261	.188	1.120
Prior Residential Treatment	.695***	.225	9.592	2.005
Treatment Length	.476***	.102	21.899	1.609
Time Since Treatment	-.853	.265	10.377	.426
Registered Indian*grade 8 or less	1.335***	0.478	7.806	3.800
Registered Indian*unemployed	0.321	.510	.397	1.378
Registered Indian*no social support	-.285	.473	.363	.752
Métis*grade 8 or less	-.344	.708	.237	.709
Métis*unemployed	1.626**	.720	5.109	5.084
Métis*no social support	-.092	681	.018	.912
Constant	-1.727	.993		

N= 692 Goodness of Fit X^2= 680.129 20 df Pseudo R^2= .50 *$p<.10$, **$p<.05$, ***$p<.01$.

more integrated into society because they must leave their reserve and attend school with Non-Aboriginals. Métis, who generally do not live on the Settlements set aside by the Provinces, or on Federal Reserves, are less likely to receive similar benefits from pursuing education. Living off-Settlement also may make unemployment a greater problem for Métis offenders, who may feel more stigmatized if not working by the dominant white culture and become more likely to escape in drinking and DUI behaviour. Because of high unemployment on Reserves, Registered Indians may not be as stigmatized and develop other coping mechanisms. Both education and employment may indicate stronger family support.

4.3.5 Interaction Terms for Treatment Resources

In a further examination of proposition ten (treatment length will reduce DUI recidivism), interaction terms were created between prior residential treatment and treatment length, to see if addictions programs might have a cumulative effect in reducing repeat drunk driving. In other words, if an offender had taken residential treatment for addiction previously, and if during his most recent incarceration taken more or less DUI programming, then what effect would this have on impaired driving recidivism? Would a record of previous intensive treatment and then completion of a longer regime (e.,g., six weeks) reduce the odds of repeat drunk driving?

The introduction of treatment interactions increased both the strength and stability of the main effects of prior residential treatment (Exp(b)= 3.088, Wald= 16.077) and treatment length (Exp(b)= 2.014, Wald= 24.588). Those who had completed residential treatment previously and took the least treatment available (reference category of two weeks or less) in their current incarceration had recidivism odds increase by a factor of three. For offenders who had not previously taken a residential program, each unit change in treatment length increased the odds of repeat DUI by a factor of two. Other predictors in the equation retained similar effects. Most importantly, results showed that taking prior residential treatment and then taking further intensive treatment lowered recidivism odds

(Table 4.5). Subtracting the treatment interaction term from the treatment length coefficient resulted in a 50% decrease in effect size (.700 - 410= .290). For each increase in treatment level for those who had taken prior treatment, the odds of recidivism increased by only 1.336 (Exp(b)= 1.336, Wald= 5.018), compared to a factor of 2.0 for those with no prior residential treatment. Thus, net of the effects of specific deterrence, prior deviance and coping resources, taking more treatment reduced the probability of repeat DUI.

These observations suggest that comprehensive treatment programs may have a long term impact in reducing repeat DUI. If first time impaired drivers participate in intensive treatment, it is not likely to be effective. Offenders were less likely to recidivate, however, when fairly lengthy treatment was repeated. This is particularly noteworthy when the main effects of treatment length are considered. A higher level of past treatment may indicate a selection effect (most serious drinking/driving problem) that creates a greater likelihood of recidivism. Beyond this effect, those offenders who participated in an intensive program were more likely to benefit from more of the same. Offenders may not be ready to admit their drinking is problematic the first time they take treatment, or they might become more adept at applying lessons after learning them a second time. Results also indicate however, that simply providing more treatment is not necessarily effective. To reduce drunk driving recidivism, it appears critical that impaired drivers with more serious addiction problems spend time in an intensive, structured, residential addictions program.

The interaction terms between prior intensive treatment and current treatment length provide partial support for the proposition that more treatment can reduce recidivism, albeit only in fairly specific circumstances. Generally, longer treatment programs appeared to have the opposite effect to that desired: more treatment appeared to lead to a higher probability of recidivism.

Table 4.5 Exploration of Treatment Interactions

Variable	B	St. Error	Wald	EXP(B)
Sentence length	-.001**	.001	6.368	.998
Fine Defaulter	.418	.337	1.541	1.519
Intermittent Server	-.614	.387	2.526	.541
Prior Drunk Driving	.095*	.053	3.161	1.100
Other Crimes	.324*	.212	2.324	1.382
Age	-.030**	.013	5.749	.973
Registered Indian	.356	.247	2.071	1.428
Métis	-.240	.343	.487	.787
Education	-.015	.055	.073	.985
Employed	.332	.229	2.099	1.393
Social Support	.219	.203	1.170	1.246
Prior Residential Treatment	1.127***	.281	16.077	3.088
Treatment Length	.700***	.141	24.588	2.014
Time Since Treatment	-.772***	.259	8.903	.426
Pr.Res*Treatment Length	-.410**	.183	5.018	.664
Constant	-.496	.827		

N=692 Goodness of Fit X^2= 693.176, 15 df Pseudo R^2= .50 *$p<.10$, **$p<.05$, ***$p<.01$.

4.3.6 Derivative Hypotheses for Other Crime Interaction Terms with Specific Deterrence and Treatment

Impaired drivers involved in a more deviant lifestyle were predicted to be less likely to be deterred from repeat drunk driving by longer prison sentences (proposition 11) or rehabilitated by treatment programs (proposition 12). To test these assertions, three interaction terms were created between a conviction for other crimes and sentence length, prior residential treatment, and treatment length.

The results reported in Table 4.6 (below) show no significant interaction between sentence length and other crime (Exp(b)= 1.001, Wald= .941). A moderate effect in the direction opposite to what was predicted was observed between prior residential treatment and other crime (Exp(b)= .511, Wald=2.406), and a slightly stronger negative interaction was observed between other crimes and treatment length (Exp(b)= .672, Wald=3.963). Impaired drivers involved in analogous acts were actually *more likely* to benefit from treatment. Introduction of the interaction terms again resulted in stronger main effects for prior residential and treatment length. For offenders convicted only of prior impaired driving, prior residential treatment increased the odds of repeat drunk driving by a factor of three, while each level change in treatment increased the odds of recidivism by a factor of two. The direct effect of other crimes (b=.686, Wald=3.833, **P<.05) became slightly stronger and more stable with the introduction of the interaction terms. The direct effect of other factors remained virtually unchanged.

Findings showed no support for propositions eleven and twelve. Offenders involved in other crimes appear just as likely to be deterred as those who "specialize" in impaired driving and actually receive more help from treatment, contrary to what was predicted. On the one hand, findings suggest that impaired drivers involved in other crimes are not so different from impaired drivers generally, and are susceptible to specific deterrence.

Table 4.6 Exploration of Other Crimes and Sentence Length/Treatment Interactions

Variable	B	St. Error	Wald	EXP(B)
Sentence length	-.003***	.002	4.249	.998
Fine Defaulter	.409	.343	1.426	1.505
Intermittent Server	-.614	.396	2.410	.541
Prior Drunk Driving	.097*	.054	3.251	1.102
Other Crimes	.686**	.350	3.833	1.985
Age	-.030**	.013	5.525	.971
Registered Indian	.373	.247	2.277	1.452
Métis	-.257	.344	.560	.773
Education	-.023	.056	.209	.975
Employed	.363	.228	2.535	1.438
Social Support	.207	.203	1.039	1.230
Prior Residential Treatment	1.117***	.331	11.416	3.054
Treatment Length	.729***	.159	20.903	2.073
Time Since Treatment	-.810***	.263	9.476	.445
Other Crime*Sentence length	.001	.001	.941	1.001
Other Crime*Prior Residential	-.672	.434	2.406	.511
Other Crime*Treatment Length	-.398**	.200	3.963	.672
Constant	-1.727	0.993		

N=692 X^2= 107.193, 17 df Pseudo R^2= .50 *$p<.10$, **$p<.05$, ***$p<.01$.

On the other hand, drunk drivers involved in other crimes appear to differ in their responsiveness to treatment, suggesting that offenders who restrict themselves to DUI offences may have more serious alcohol problems that are not easily amenable to treatment.

4.4 Discussion

Observed findings provided only partial support for the proposition that impaired drivers who received longer sentences (greater than 121 days) were less likely to drink and drive (proposition one). Fine defaulters did not appear more likely to reoffend than other impaired drivers, while intermittent servers were actually less likely to reoffend (proposition two). The specific deterrent effect of sentence length on recidivism did not appear to be linear. Weak and insignificant effects were observed for sentence length ranges that were greater than one hundred-twenty days, but less than the reference category of 367 days. Results suggested that a "tipping effect" or deterrence threshold was achieved by sentences over four months, but not longer than six months. Thus, for purposes of specific deterrence, an optimal sentence length would range from 121-180 days.

Intermittent sentence servers receive shorter and more convenient custody terms, but net of the effects of other risk factors, they did not exhibit higher recidivism rates. Lower reoffence by weekend servers may be the result of a selection effect at the time of sentence. Intermittent sentences are intended to punish offenders, but still allow them to maintain employment and family ties in the community. To be effective when assigning intermittent sentences, judges must determine which offenders do not require a longer sentence to deter drunk driving recidivism. In general, it appeared that judges were successful. Tabular analysis showed that intermittent servers were twice as likely to avoid DUI recidivism as other offenders.

If judges were successful in granting weekend sentences, then why were they not so successful in designating fine default status? A selection effect is again the likely culprit, although selection would operate differently in this case. Judges may well evaluate fine recipients as better risks at the time of sentence (similar to intermittents). Those who did not pay fines in the current sample, however, were actually "self-selected." Almost all offenders are given time to pay off fines assigned in court, and over 90% of them do pay their fines (Alberta Justice 1994). Offenders in this study came from the minority group who were placed in custody as a result of their own failure to pay off their fine. In that sense, fine defaulters selected their status. Given that offenders can obtain extensions to pay their fines, and that those without sufficient funds or who are unemployed can work off fines through the provincial Fine Option program, who is likely to end up in custody? An in-house study by Alberta Correctional Services (1990) suggested that offenders who defaulted on their fines planned poorly (or not at all), were more likely to be unemployed, and were unaware or had neglected to inquire about fine option programs. Thus fine defaulters appeared to "self-select" themselves into custody by an inability or unwillingness to deal with their fines.

Prior deviant behaviours were related to the (future) deviant behaviour of DUI recidivism (proposition three). Net of the effect of other risk factors, prior impaired driving history was also a predictor of future impaired driving, while previous commission of other crimes showed only relatively weak and inconsistent effects in increasing recidivism. The weak effects of other criminal acts was surprising, given the consistent effects demonstrated by criminal history in previous research (Jonah 1990; Peck et. al. 1993). The results observed in this DUI sample may be due to weakness in measurement of the "other crimes" indicator. It could be argued that measurement using frequency of convictions for offences such as theft and assault, might better capture offender differences in analogous acts and prior deviance.

Moderate support was found for the proposition that DUI recidivism declines with age (proposition 4). Younger offenders were more likely to drink and drive again, but age did not appear to have a large effect until after the age of forty. This late shift in recidivism suggests that as a coping resource, maturity does not have a substantial impact on DUI behaviour until the onset of early middle age.

Registered Indians were found more to be more likely than Non-Aboriginals to drink and drive again (proposition 8). The effect for Registered Indian status was small, however, and Métis offenders were no more likely to recidivate than non-Aboriginals. The presence of coping resources (education, employment and social support) was not associated significantly with the risk of recidivism (proposition 9). Indeed, impaired drivers with spouses and those who were employed showed a slight tendency to be more likely to recidivate. The lack of effect for social support may be the result of measurement problems. Marital status itself is a poor measure of the quality of relationships. In some cases, marriage or a common-law relationship may create rather than relieve stress, and separation or divorce may result in reduced stress, if the relationship was negative. In some cases, spouses may impede efforts to quit or control drinking behaviour. Spouses may be reluctant to support offender efforts to quit drinking, because this means they must also quit or restrict drinking, as well as reduce the frequency of alcohol-related social activities.

Contrary to the notion that employment would reduce potential stress and increase the probability that life could be successfully managed, employment increased the likelihood of drunk driving recidivism for Non-Aboriginal offenders, This may be explained by considering three important features necessary for drunk driving: alcohol, a car and sufficient money to purchase both. The ability to buy a vehicle (even an older one), or a car and insurance for one's spouse (either of which may be driven while under license suspension) is enhanced by employment. A regular pay cheque also will increase the capacity to purchase enough alcohol to become drunk, particularly outside the home.

Thus, employment may increase the opportunity for offenders to drink and drive, increasing the likelihood of recidivism.

Overall, the effects observed for employment are modest. Again, the size of effects may reflect the complexity of the relationship between stress and employment, as well as measurement problems. Employment can be stressful, and sometimes long hours or work in isolated locations may contribute to excessive drinking. The measure used for employment (offender self-report upon admission) obscures our ability to assess whether the employment is stable, and available data does not reveal the actors own perception of their employment situation (quality of work, length of employment). Better measurement might allow for better specification of employment situations that may condition stress and consequent excessive drinking and drunk driving.

There was an observed tendency for offenders to avoid recidivism if they had taken residential treatment prior to their most recent incarceration, and then undertook extensive treatment associated with the most recent offence (a cumulative effect). Beyond this effect, the more treatment offenders participated in, the greater the apparent probability of DUI recidivism. Again, this may be a selection effect. In the corrections system, program attendance is negotiated between the caseworker and the offender. Although offender program enrolment is voluntary, drunk drivers must serve most of their sentence if they do not take treatment. Hence caseworkers hold the upper hand in negotiation and offenders almost always undertake some treatment. The greater the perceived severity by the caseworker and the offender, the more likely that more intensive treatment will be required by casework staff in order for a positive recommendation for early release. Thus, offenders with the most severe drinking problems are likely to undertake the most treatment. Assignment of treatment levels according to severity, however, did not directly correspond with greater success rates. With the exception of cumulative effects for some offenders, more often those with serious addictions problems did not appear to respond to treatment.

Three theories were combined in the model examined in this chapter to inform our exploration of repeat drunk driving behaviour. Observations were also directed at providing some insight into the impact of justice system interventions, coping resources, stress and social circumstances have on the risk of recidivism. Specific deterrence (Beccaria 1764), which has shown inconsistent effects in other studies, had modest effects for our drunk driving sample. The threshold effect achieved at four to six months and the lower recidivism rate shown by intermittent servers, demonstrated that shorter, not longer sentences may be an effective consideration for sentencing within the justice system. The general theory of crime (Gottfredson and Hirschi 1990) predicted that prior deviance and analogous acts would be the strongest predictors of future deviance, yet they did not show strong effects on future impaired driving. Prior impaired driving convictions showed moderate effects on recidivism, while offenders involved in analogous acts (other crimes) were only slightly more likely to recidivate. Younger offenders were more likely to recidivate, consistent with the general crime theory, but this might also be explained simply as a result of maturity (stress theory coping resource). Our strain/stress theory derived from Agnew (1992) and Pearlin (1989) received only modest support, as Aboriginal status had only small effects on recidivism. However, Aboriginals were much more likely to recidivate if they had less education and were unemployed. The different life circumstances of Registered Indians and Métis offenders appeared to condition the effect of coping resources. Indeed, with the exception of the maturity gained by age, coping resources did not assist offenders in avoiding drunk driving. Social support did not impact repeat drunk driving and employment actually increased the likelihood of repeat DUI for Non-Aboriginals, possibly because more financial resources may increase the opportunity to drink and drive. More treatment generally increased the odds of DUI recidivism, but offenders who kept taking more intensive programs reduced the probability that they would drink and drive again.

CHAPTER 5 RESULTS OF INTERVIEW DATA ANALYSES

5.1. Correlations and Tabular Relationships

The 145 case follow-up interview subsample was first examined for bivariate relationships between the outcome variable of self-reported repeat drunk driving and the explanatory variables of deterrence, prior deviance, stress, and coping resources. Before our analysis moved to more complex multivariate analysis that introduces controls for alternative explanations, correlations were examined to establish the foundations of observable relationships corresponding to our research propositions which seek to explain repeat drunk driving,

The very richness of the interview data and the number of indicator variables available in the study's subsample posed a challenge for analysis and presentation. In an attempt to simplify the large number of indicators by grouping them into independent (uncorrelated) underlying factors, an exploratory factor analysis was attempted for the interview data set. The analysis failed to identify independent variables in a small number of factors that could adequately represent a limited number of underlying concepts. Nonetheless, some variable clusters were grouped on the basis of a priori (content) face validity, combined with strong correlations and similar observed bivariate relationships with the dependent variable. Stress (0=no stress, 1=some stress, 2 stressful, 3=very stressful) and life satisfaction (1=very satisfied, 2=satisfied, 3=somewhat satisfied, 4=dissatisfied, 5=very dissatisfied) indicators were moderately correlated (r= .28***), both had similar moderate zero-order correlations with repeat DUI (stress r= .16, life dissatisfaction r= .15). In terms of content, both indicators represented the theoretical domain of perceived stress. To take advantage of their correspondence, they were standardized to create a perceived stress variable. Combining and standardizing two variables is achieved by making use of variable means and standard deviations through the following formula: $\{(var1-\bar{x}var1)/sd.var1\} + \{(var2-\bar{x}var2)/sd.var2\}$.

The dichotomous variable representing the history of residential treatment (1=yes, 0=no) and ordinal treatment length variable (0=2 weeks, 1=three weeks, 2=4 weeks, 4=6 weeks), were also strongly correlated,(r= .32***), showed equivalent correlations with self-reported DUI (prior residential r= .06, treatment length r= .06) and both were indicators of a treatment coping resource, consequently they were also standardized into a single indicator of prior treatment.

Other data transformations were conducted to increase the number of available cases for analysis. Registered Indian and Metis categories were collapsed into a single Aboriginal category (1=yes, 0=no). Alcohol consumption was recoded from a seven category to a four category variable to increase cases available for tabular analysis. Frequency of alcohol consumption was recoded as follows: 3= drinks five-seven days per week, 2= drinks two days per week, 1= drinks once per month, 0=abstinent.

As mentioned in chapter four, the correlation coefficient indicates the direction and magnitude of association between two variables. Analysis of repeat DUI bivariate relationships only considered substantive correlations between predictors and self-reported drunk driving. Only correlations of .10 or greater are noted, because that meant that indicated that at least 1% of the variance (r^2= .01, or 1%) was shared. A correlation coefficient of:

.10 to .14 was considered "small";

.15 to .18 "modest" (r^2= 2-3%);

.19 to .25 "moderate" (r^2= 4-6%);

.26 to .35 "strong" (r^2= 7-12%), and;

.36 and higher was classified as "very strong" (r^2= 13% or more).

A correlation matrix of all predictors and the dependent variable of self-reported drunk driving is included in Appendix A.

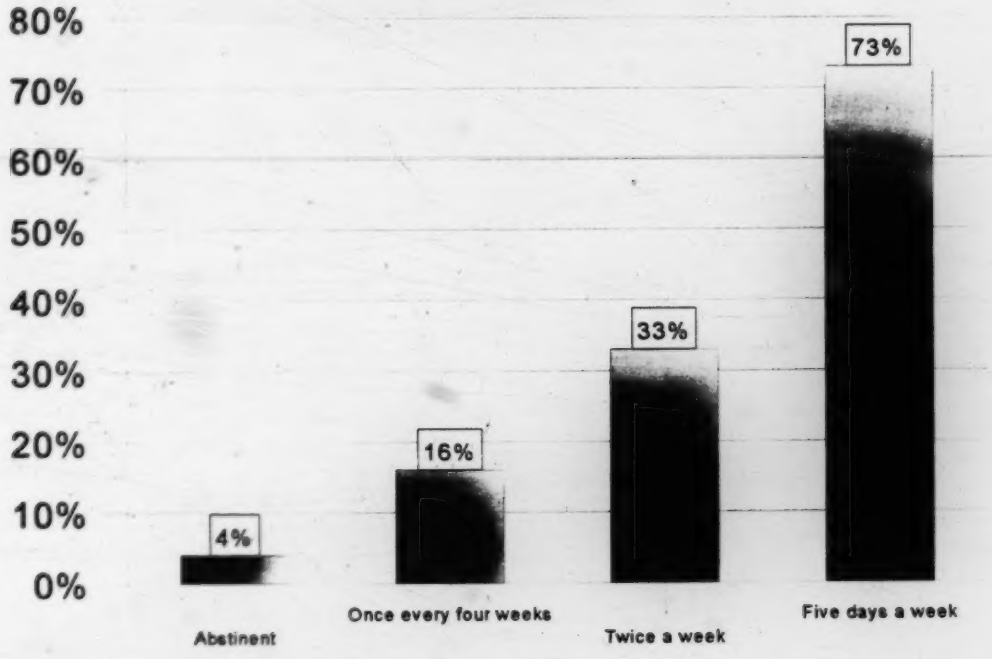
Table 5.1 Correlations Between Self-Report Repeat Drunk Driving

Variable	r	N	Variable	r	N
Specific Deterrence			**Perceived Stress**		
Sentence Length (1, 2, 3, ... in days.)	-.04	144	Perceived Stress (0...15)	.19*	140
Prior Deviance			**Coping Resources**		
Excessive Drinking (0=abstinent, 1=twice a month or less, 2=once to three times a week, 4=four to seven days a week.)	.43***	138	Age[a] (1,2,3.... in years)	.01	144
Impaired Driving History (1,2,3,... prior convictions.)	.14	144	Education (1,2,3,...by grade level)	.06	144
Other Crimes	.20*	144	Employed	.04	144
Chronic Stressors			Gained Employment	.01	144
Aboriginal Status	.10	144	Health	-.12	138
Chronic Health Problems (0=no problems, 1,2,3 index severity.)	-.05	140	Social Support	.02	144
No Valid Driver's Licence	.15	144	Gained Social Support	.05	144
Life Event Stressors			Negative Social Support	.24**	140
Lost Employment	-.09	144	Prior Treatment (0=some...7 levels of experience)	.08	144
Lost Social Support	.06	144	Drinking Avoidance Strategies (0=no effort, 1=one strategy, 2= two strategies, 3=three strategies,, 4=four strategies, 5=five strategies.)	-.34***	137
Changed Residence Last Two years (0=never, 1=once, 2=twice, 3 = three or more.)	.01	142			

****p<.001, **p<.01, *p<.05 (two-tailed).*

[a]Also used as an indicator for low self control.

Unless otherwise indicated, variables are coded dichotomously (1=yes, 0=no).



Graph 5.1

5.1.1 Specific Deterrence

Proposition one postulated that as sentence length increased, the probability of drunk driving recidivism would decrease. Sentence length showed no notable correlation with repeat drunk driving (Table 5.1), providing little support for this proposition. The lack of a bivariate association is consistent with the negligible effect observed for official records data.

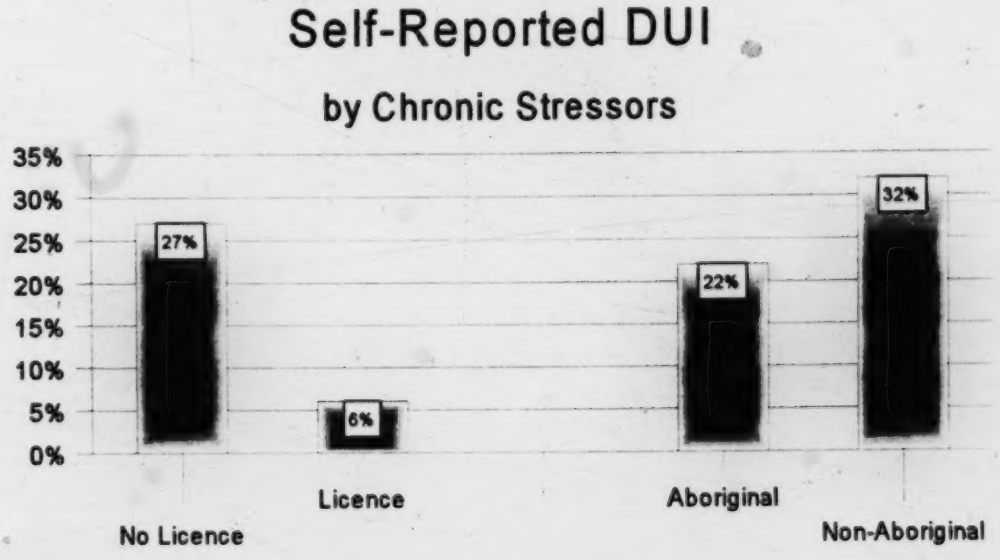
5.1.2 Prior Deviance and Alcohol Consumption

Observed bivariate associations generally supported proposition three, which predicted that individuals who engaged in prior deviance, analogous acts, and seek

pleasure, would be more likely to drink and drive again. As reported drinking frequency increased, so did the likelihood of recidivism (r= .43***, X^2= 28.487***). The relationship between self-reported drunk driving and alcohol consumption was strikingly linear (Graph 5.1). Prior impaired driving (r= .14) and other crimes (r= .20) yielded small to moderate positive correlations with recidivism (Table 5.1).

5.1.3 Stress

Only very modest support was found for proposition six, which posited that stress would increase the likelihood of repeat drunk driving, and proposition eight, that Aboriginals would be more likely to drink and drive again. Aboriginal status (r=.10) and the absence of a driver's licence (r=.15) were both weakly associated with a greater likelihood of DUI recidivism (Graph 5.2). Chronic and life event stressors of physical health problems, lost employment, loss of a spouse and residence changes had negligible associations with self-reported DUI. The strongest bivariate association was observed for

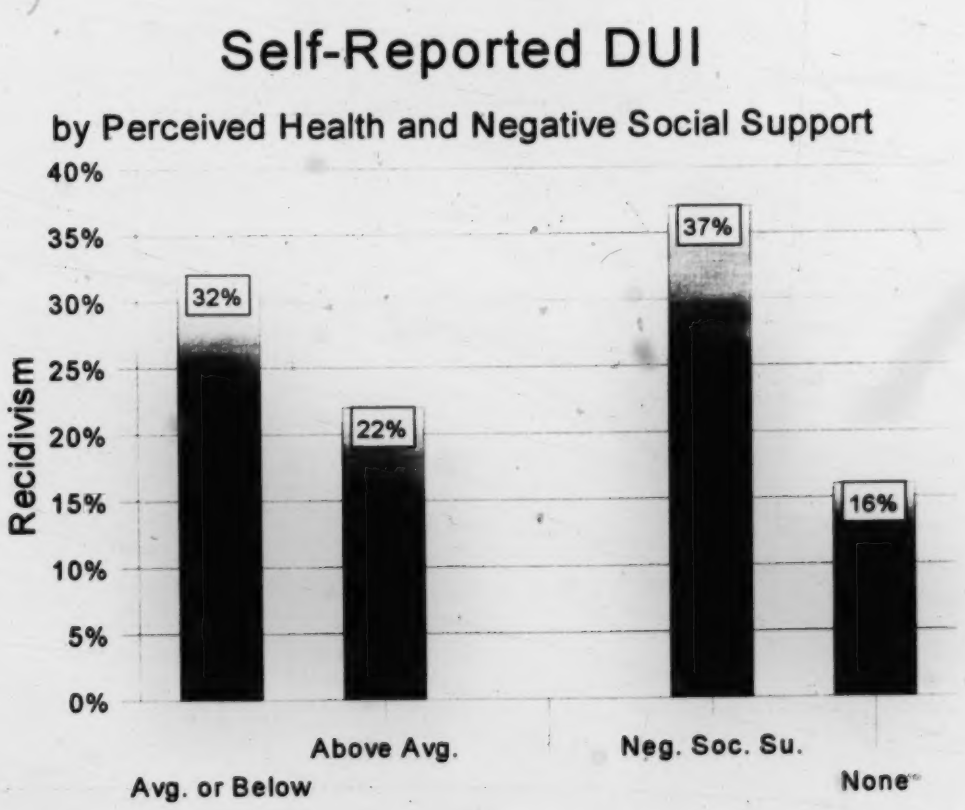


Graph 5.2

perceived stress. As perceived stress increased, a positive relationship was observed with recidivism (r= .19*). The tabular relationship between the standardized perceived stress variable and DUI recidivism is not graphed because of too many stress categories.

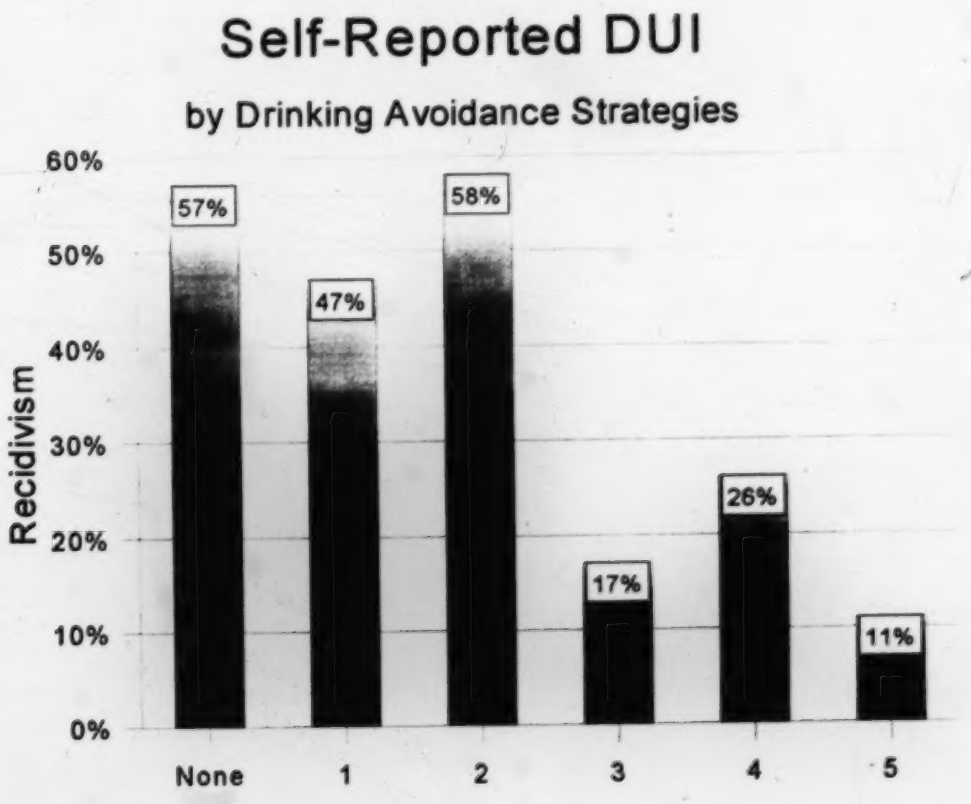
5.1.4 Coping Resources

Coping resources were predicted to assuage the effects of stress and reduce the likelihood of repeat DUI (proposition seven). Three of ten coping resources showed various effects in the predicted direction, providing limited support for proposition seven. Individuals who felt very healthy were somewhat less likely to report drinking and driving



Graph 5.3

(r=-.12). Negative social support (contact with drunk drivers) increased the probability of recidivism (r=.24**, Graph 5.3), and the number of drinking avoidance strategies reported had a strong negative impact on DUI recidivism (r= -.34***, X^2=20.352*** 5 *df*, 3 cells<5, Graph 5.4). As the number of drinking avoidance behaviours reported by drunk drivers increased, the probability of self-reported drunk driving decreased. The relationship was neither perfectly linear, nor monotonic, but the trend was clearly towards a decline in impaired driving as avoidance strategies increased.



Graph 5.4

Other coping resources of education, employment, gaining employment, social support and gaining social support showed no association with repeat drunk driving. Recidivism did not decline with age (contrary to proposition 4), nor were increases in treatment experiences associated with a reduction in repeat DUI (proposition 10).

To summarize, the strongest bivariate relationships observed with DUI recidivism were for alcohol consumption, drinking avoidance strategies, negative social support, and perceived stress. Other crimes and no valid driver's licence showed modest relationships. Small effects were noted for impaired driving, physical health, and aboriginal status.

5.2 Indirect Effects of Low Self-Control through Alcohol Consumption

Proposition five asserted that low self-control impaired drivers would be more likely to drink more (pleasure seeking), thereby indirectly increasing their likelihood of repeat drunk driving. It was also anticipated that alcohol consumption would increase with increases in stress, and that the effects on drinking/DUI reoffence would be moderated by greater coping resources. The effects of prior deviance, stress and coping resources were explored through multiple regression, in order to assess their potential indirect effects on drunk driving recidivism (Table 5.2). Only two predictors, however, showed stable and substantive effects on drinking behaviour: negative social support (beta= .21**) and drinking avoidance strategies (beta= -.49***). More importantly, low self-control indicators of prior DUI (beta=.07), analogous acts (beta= .05) and age (beta= .09), as well as stress theory's perceived stress (beta= .13) indicators had no substantive or stable effects, providing no support for proposition five. They could not therefore have direct effects on reoffence through drinking. Calculation of these indirect effects on drinking would multiply the effect of exogenous variables on drinking by the affect of drinking on reoffence, where either one of those effects approaches zero.

Table 5.2 Subsample Multiple Regressions For Excessive Drinking

		Main Equation		
Variable		**B**	**SE**	**t statistic**
Prior Deviance	Impaired Driving History (1,2,3, prior convictions)	.033	.045	.744
	Other Crimes	.093	.168	.557
	Age[a] (1,2,3, in years)	.009	.010	.877
Chronic Stressors	Aboriginal Status	.075	.211	.35
	Chronic Health Problems (0=no problems, 1,2,3 index severity)	-.092	.077	-1.19
	No Valid Driver's Licence	.221	.270	.817
Life Event Stressors	Lost Employment	.437	.293	1.491
	Lost Social Support	-.224	.269	-.833
	Changed Residence Last Two years (0=never, 1=once, 2=twice, 3 = three or more)	-.098	.086	-1.138
Perceived Stress	Stress (0=none, 1=not much, 2=somewhat, 7=very stressed)	.115	.083	1.377
Coping Resources	Education (1,2,3, by grade level)	-.032	.050	-.640
	Employed	.022	.285	-.093
	Gained Employment	.256	.249	1.031
	Health	-.170	.165	-1.031
	Social Support	.033	.182	.180
	Gained Social Support	-.167	.249	-.671
	Negative Social Support	.439***	.169	2.597
	Residential Treatment	-.130	.171	-.760
	Treatment (0=some 5=most treatment)	-.043	.073	-.597
	Drinking Avoidance Strategies (0=no effort, 1=one strategy, 2= two strategies, 3=three strategies,, 4=four strategies, 5=five strategies)	-.245***	.052	-4.714
	Constant	2.150	.753	
N = 131	R^2= .21			***p<.01, **p<.05, *p<.10, two-tailed.

[a]Also used as an indicator for the coping resource of maturity.
Unless indicated, variables are dichotomous measures (1=yes, 0=no).

Thus, although alcohol consumption, prior drunk driving, other crimes and stress all had small to large direct bivariate associations with drunk driving, they showed no apparent effect on drinking behaviour. The lack of a crime-drinking association runs contrary to the general crime theory notion of strong inter-relationships between analogous deviant behaviours. These observations suggest that it may be better to distinguish deviant behaviours and their causes, rather than presume a general trait of low self-control.

Other related research suggests a stronger association between stress and alcohol consumption (Sher 1982; Sher and Levenson 1987). The lack of a strong stress-drinking connection may be a result of poor measurement (Powers and Kutash 1985). Use of a more detailed alcohol assessment instrument and more detailed questions about stress may have better distinguished excessive alcohol use and chronic role stress, as well as event associated stress. On the other hand, drinking and stress measures do show moderate to large direct associations with drunk driving. Another plausible explanation of the lack of a strong observed relationship between stress and drinking is that the drunk driving-stress relationship does not involve excessive drinking to relieve stress. As a maladaptive response to stress, drunk driving may represent thrill-seeking and risk-taking behaviour. These stress-relief behaviours are very different from the numbing effects of intoxication.

Given the lack of indirect effects of other deviance and stress, the exploratory model presented in chapter two was pursued no further.

5.3. Self-Report Drunk Driving - Main Effects

Self-report drunk driving was regressed on indicators of specific deterrence, prior deviance, stress and coping resources, using a listwise deletion of missing data. One hundred and twenty (123) cases had data sufficient for analysis, a loss of 15 percent. A series of regressions were run and with and without certain indicator variables to increase the available N and assess consistency of effects and overall contribution to the equation

(see Appendix A). Variables that did not contribute to the equation or which showed unreliable effects (large standard errors) such as no driver's licence, gained employment, and no social support were removed to allow estimation of a reduced form equation with an N of 128 cases (a loss of 11.7% of the cases). Variables removed from the equation included: the specific deterrence indicator of sentence length, chronic stressors of aboriginal status, no driver's licence, chronic health problems, life event stressors of employment loss and social support loss, coping resources of education, employment gain, health, social support, gained social support, and treatment received (for full equation see Appendix A). The reduced form equation included the low self control indicators of alcohol consumption, impaired driving history and other crimes. The model also included the stress indicators of residence changes and perceived stress, and the coping resource indicators of employment, negative social support, and drinking avoidance strategies. The observations fit the model (Goodness of Fit X^2= 88.760) and attained a reasonably high pseudo R^2 of 41% (Table 5.3).

5.3.1 Prior Deviance and Alcohol Consumption

Other deviant behaviours and the pleasure seeking activity of alcohol consumption showed moderate to strong effects in the predicted direction providing some support for proposition three. The odds of self-reported drunk driving increased by a factor of three for each level increase in alcohol consumption, increased by .32 for each prior DUI conviction, and increased by a factor of 2.5 for those involved in other crimes. Effects for alcohol consumption (Exp(b)= 2.931, Wald= 8.663) were reliable, while DUI history (Exp(b)= 1.319, Wald= 3.716) and other crimes (Exp(b)= 2.454, Wald= 2.535) were only moderately stable. Compared to zero order correlations, the introduction of controls led to considerably stronger, more stable positive relationships between DUI recidivism and impaired driving (observed zero order r= .14), while the DUI-other crimes association became stronger but not much more stable (r= .20). The substantive, observed effects of alcohol consumption on repeat drunk driving (r=.43***) remained strong, net of the effects of other predictors.

Table 5.3 Subsample Reduced Form Logistic Regression and Zero Order Correlations For Self-Reported DUI

Variable	r	B	SE	Wald	Exp(b)
Alcohol Consumption (0-3)	.43***	1.076***	.365	8.663	2.931
Impaired Driving History (0-9)	.14	.277**	.144	3.716	1.319
Other Crimes (0, 1)	.20*	.898	.564	2.535	2.454
Changed Residence (0-3)	.01	-.437	.277	2.490	.646
Perceived Stress (0 ... 15.2)	.19*	.520**	.213	5.941	1.682
Employed (0, 1)	.04	.983	.650	2.285	2.672
Negative Social Support (0, 1)	.24**	.779	.576	1.829	2.179
Drinking Avoidance Strategies (0-5)	-.34***	-.588***	.191	9.486	.555
Constant		-5.034	1.454	11.454	

N= 128 Goodness of Fit X^2= 88.760 Pseudo R^2= .41 ***$p<.01$, **$p<.05$, *$p<.10$, one-tailed.

5.3.2 Stress

Observed results provided somewhat mixed support for proposition six, which predicted that stress would increase the likelihood of recidivism. Changing residences had a moderate, reliable effect in a direction opposite to that predicted (Exp(b)= .646, Wald=2.490). Each time an offender moved the odds of recidivism decreased by a factor of .55. On the other hand, perceived stress exerted strong and consistent positive effects on repeat DUI (Exp(b)= 1.682, Wald= 5.941) in the predicted direction. As reported stress increased, so did the odds of recidivism. The bivariate association between repeat drunk driving and perceived stress (r= .19**) was strengthened in the logistic equation.

Controls for other predictors altered residence change effects on recidivism remarkably: from a negligible bivariate relationship (r= .01) to a substantial and consistent negative effect on repeat drunk driving in the logistic regression. Bivariate correlations between changing residence and other indicator variables were reviewed to assess possible interaction effects. Changing residence showed moderate positive correlations with other crimes (.26**), perceived stress (.22**) and negative social support (.29***). The positive direction of the relationships, however, suggests that changing residence should increase, not decrease the likelihood of recidivism.

5.3.3 Coping Resources

Three of ten coping resources exhibited significant negative effects on the likelihood of repeat drunk driving, providing partial support for proposition seven. The coping resource of being employed, however, actually had effects opposite to those predicted, as having a job increased the odds of repeat DUI by a factor of 2.7. The employment effect was moderate in size but only modestly reliable (Exp(b)= 2.672, Wald= 2.285). Each additional drinking avoidance strategy reported decreased repeat DUI odds by a factor of .80. Drinking avoidance strategies showed strong and consistent effects (Exp(b)= .536, Wald= 9.486). Negative social support increased the likelihood of

repeat offending by a modest factor of 2.2, and its effects (Exp(b)= 2.179, Wald= 1.829) were only modestly reliable.

Compared to observed zero order relationships, employment showed a stronger, more consistent effect in the controlled analysis. The strong bivariate association between drinking avoidance strategies and repeat DUI (r= -.34***) became somewhat stronger and remained consistent when other factors were controlled. The magnitude of the correlation for negative social support (r= .24**) was generally similar to effects observed in the logistic regression.

5.3.4 Discussion

Persistence in drunk driving was strongly and consistently related to both prior deviance and pleasure seeking behaviour, supporting proposition three and the general theory of crime. Surprisingly, indicators of prior impaired driving and other crimes did not exert strong nor highly reliable effects on repeat drunk driving, although these are favoured indicators of low self-control (Gottfredson and Hirschi 1993). Impaired driving did not decline with age, contrary to proposition four from the general theory of crime. The pleasure seeking activity of alcohol consumption exerted strong and reliable effects on DUI recidivism. Thus, more general measures of past deviance, analogous acts, and age were not as helpful as predicted in explaining drunk driving persistence and desistence. The temporally and perhaps causally closer measure of alcohol consumption in the past twelve months showed stronger zero order and controlled effects on DUI recidivism. Alcohol consumption may be a better measure of low self-control than prior drunk driving and other crimes. Prior drunk driving is based on DUI convictions, which are based on offences detected by police, and this likely underestimates the total amount of drunk driving by an offender. The measure of other crimes is a dichotomous measure again based on any conviction by police, and may not reflect variation in predatory criminal activity. On the other hand, the alcohol consumption variable was not as accurately measured as desirable. It does not precisely measure the amount of alcohol consumed by

individuals at each sitting. Nor does it allow for identification of binge drinking. Nevertheless, results clearly suggest that continued involvement in drinking by impaired drivers increases the risk of repeat drunk driving.

A possible interpretation of the effects of alcohol consumption is that it measures opportunity, another feature of Gottfredson and Hirschi's general crime theory. Simply put, Gottfredson and Hirschi link most crimes to opportunity on the one hand and a lack of self-control on the other. Thus, increased occasions of alcohol consumption can work to create more drunk driving opportunities for low self-control offenders. The strong effects of opportunity, even when other self-control measures are introduced, has been noted by others testing the general theory of crime (Gramsick et. al. 1993).

How can we account for the observation that the life stress event of changing one's residence had an effect in the direction opposite to that predicted (proposition 6)? Perhaps moving did not serve as a stressful life event indicator. It may actually indicate coping resources. Rather than continue to reside in negative situations or with others who drink heavily, offenders who choose to live elsewhere may be taking purposeful action to reduce stress. In a fashion analogous to drinking avoidance strategies, a change in residence may reduce the probability of drinking and DUI.

Perceived stress increased the probability of drunk driving, supporting proposition six. Our somewhat simple stress indicator, which combined perceived day to day life pressures and unhappiness with one's lot in life, showed both a strong bivariate relationship and strong partial effects on reoffence. This reaffirms prior research, which suggests that DUI behaviour results is in part a maladaptive response to perceived life pressures (Donovan, Marlatt and Saltzburg 1983).

Employment situations were conceptualized as life stress events and coping resources. The stress presumably associated with reported loss of employment showed

only a weak negative association with drunk driving recidivism (See Appendix table). Conversely, reported employment moderately (but inconsistently) increased the likelihood of drinking and driving. Losing employment did not appear to be a stressful life event, and employment did not operate as an effective coping resource. Results indicated that the stress-employment relationship is not straightforward. Employment may reduce stress, but it may also create or increase stress. Productivity demands, conflicts with co-workers and supervisors, all may increase day to day stress. Employment provides financial resources to cope with every day life, but money also enables drunk driving. Employment provides money to purchase alcohol, go out to taverns, or buy and operate a motor vehicle (albeit illegally). Conversely, not working means less money, restricting opportunities to consume alcohol, either at home or in social situations where opportunities to drive may exist.

Gaining employment since the last incarceration also showed only a moderate and unreliable effect in the predicted direction (see Appendix table). This effect should be interpreted cautiously, because of the size of the standard error, and because there is a strong correlation between current employment and gaining employment. Still, obtaining employment may be a helpful coping resource for offenders, unlike employment generally or the loss of work. As Laub and Sampson (1993) have suggested, more detailed measurement of a change in offender employment circumstances might help determine when offenders have reached a "turning point" in the life cycle, and decided to assume a more stable, law-abiding life style.

Drinking avoidance strategies had the strongest and most consistent negative effect on DUI recidivism, and provided the strongest support for proposition seven. Skipping parties or social events that may involve alcohol, avoiding friends who drink a lot, going to bars less often, limiting alcohol consumption, and simply trying to avoid drinking were strategies that had positive results for offenders. Those who reported engaging in these purposeful strategies to avoid drinking were also successful in greatly reducing recidivism

odds. These results suggest that drunk driving desistence is not quite the random outcome implied by low self-control theories (i.e., overall decline in DUI with age). The effectiveness of drinking avoidance strategies indicates that offenders can plan and take action to avoid drunk driving, and success of these strategies has implications for the potential design of treatment programs.

Results also failed to support a number of other explanations, and some propositions only received partial support because indicators did not display hypothesized relationships with repeat drunk driving. Sentence length showed only weak effects in the predicted direction in both bivariate and controlled regressions on self-reported drunk driving, providing little additional support for proposition one. Aboriginal status had a very small positive bivariate association recidivism (in the predicted direction), but the effect was weakened and actually changed direction in the logistic regression. Aboriginals appeared no more likely than Non-Aboriginals to report drinking and driving again in the follow-up sample.

The chronic stress of not having a drivers licence substantially increased the odds of drinking and driving. There were few respondents with a licence (16) however, leading to unreliable estimates (Exp(b)= 3.19, but SE= 1.31, see Appendix A). The effects of prior deviance, alcohol consumption, other stressors and coping resources on licenced and non-licenced drivers is a subject that bears further inquiry. Licenced drivers may perform better because of a selection effect. Motor vehicle officials may not allow higher risk offenders back on the road if they think offenders are likely to drink and drive again. Yet for some (N= 129) drunk drivers in this study, obviously not having a licence did not prohibit drunk driving recidivism.

Stress was expected to increase the likelihood of self-reported impaired driving, but a number of stress indicators showed little or no bivariate or multivariate associations with repeat drunk driving. Chronic health problems did not appear associated with drunk

driving (proposition 6). This is a surprising observation, because we would expect chronic problems to lead to increased stress and more drunk driving. The stress of chronic problems may have been offset however, by reduced opportunities to drink and drive. Persons with chronic health problems may have been less likely to have opportunities to drive, and some chronic health problems may actually lead to reduced alcohol consumption.

Social support was conceptualized both in terms of changes that may bring about life stress ("losing" a spouse) and coping resources (being married or common-law, or becoming involved in a formal relationship). Neither indicator showed any appreciable effect on recidivism. Of course, this lack of association may reflect difficulties in measuring social support (Thoits 1995). A marital relationship may be a stressor for some rather than a coping resource. For some people, a stressful marital relationship may lead to more drinking or socializing outside the home to escape or relieve tension, and spouses may be drinking partners that encourage rather than discourage DUI. Indeed, leaving a bad marital relationship may represent stress-reduction rather than trauma, in that such action may involve purposeful behaviour to avoid risk (drinking) situations.

Education did not appear to act as a coping resource in drunk driving avoidance. What this may reflect the relative homogeneity of education within the DUI group, and the concentration of impaired drivers in a blue collar type of occupation. Education may not have varied enough in the study group to significantly differentiate individual life circumstances. Perceived health showed a small negative bivariate association (as predicted) with DUI recidivism (r= -.12), but these effects were accounted for by other factors in the controlled analysis. In looking at other bivariate associations, perceived health was moderately correlated with education (r= .26**) and employment (r= .20*) but not with perceived stress (r= .07), which exerted a strong, consistent effect on DUI recidivism.

There was no bivariate or multivariate associations observed between treatment and self-reported drunk driving, contrary to proposition ten. This may be due to a selection effect similar to that noted in chapter four. Correctional staff may push the highest risk cases to take the most treatment as part of a condition of their release. But because this high risk group is the most resistant to change, their recidivism rates are higher despite the increase in treatment. Overall, impaired driving and addictions programs had little effect on the follow-up study sample.

5.4 Explanations Using Interactions

Individual characteristics, justice system interventions, and social situations may interact to increase (or decrease) the probability of DUI recidivism. In an exploratory analysis, selected interaction terms were introduced in reduced form equations to simplify the presentation and assessment of indicator effects. In evaluating interactions, it is important that changes are explored in the effects of all indicator variables. For example, an age-stress interaction term might not change the direct effects of age or stress, but it might substantially increase the effect of DUI history. To enhance parsimony, equations were built from the reduced form logistic regression presented in Table 5.3. Controls were included from all three theoretical domains of specific deterrence (sentence length), low self-control (prior DUI, other crimes, alcohol consumption) and stress (stress, residence change, aboriginal status, employment, employment gain, negative social support, avoidance behaviours and treatment resources). Introduction of these variables resulted in the loss of 17 cases (11.7%) due to missing data. This was consistent with the sample size reduction in the previous subsample equations, but sample size restraints limited the number of interaction terms that could be introduced.

5.4.1 Selected Aboriginal Status Interactions

Aboriginals were expected to suffer more adverse consequences from stress than Non-Aboriginals, because of their generally disadvantaged position in society (proposition 9). To test this proposition, interaction terms were created for Aboriginal status and the

two substantive stress indicators -- residence change and perceived stress. Employment loss, social support loss, and no driver's licence indicators were not used because their small number of positive cases created unreliable effects, while use of the chronic health problem indicator resulted in a prohibitive loss of valid cases for analysis. Aboriginal-stress interaction terms were included in a logistic regression of self-report DUI on alcohol consumption, prior impaired driving, other crimes, residence change, perceived stress, negative social support, and drinking avoidance strategies (Table is appended).

The equation fit the data reasonably well (Goodness of Fit X^2= 89.347, Pseudo R^2= .41), and the fit was similar to that of the main equation presented in Table 5.3. The interaction terms did not improve prediction in the alternative model. With the introduction of interaction terms the Aboriginal status main effect changed sign (small negative to larger positive). Aboriginals were more likely to be involved in repeat drunk driving by a factor of 2.7. With a large standard error, however, Aboriginal status effects also were very unreliable (Exp(b)= 2.725, SE= 1.772, Wald=.320).

Residence change behaved as a coping resource for Aboriginals, with the odds of recidivism decreasing by a factor of 3.3 times each time a move was made. This interaction effect was moderately strong and reliable (Exp(b)= .301, Wald= 4.106). The residence change effect, however, appeared simply to be displaced. The effect of residence changes for Non-Aboriginals became weak and very unreliable (Exp(b)= .889, Wald= .139). There was no apparent interaction between Aboriginal status and perceived stress (Exp(b)= .087, Wald= .043). The direct effects of perceived stress remained relatively unchanged with the introduction of the interaction terms. The introduction of the interaction terms did not change appreciably the effects of other predictors in the equation. Alcohol consumption, DUI history, other crimes, employment and negative social support were positively associated with repeat drunk driving, while DUI avoidance strategies maintained a negative effect.

In summary, observed results did not support proposition nine. Perceived stress and the life event stressor of moving had a similar impact for Aboriginals and Non-Aboriginals. As a further test, the regression equation was rerun with the subsample split into Aboriginal (N=35, 7 cases missing) and Non-Aboriginal groups (N=93, 10 cases missing). Results again showed few differences between the two groups. Because of the small number of cases available for analysis, the Aboriginal subsample typically had large standard errors associated with odds ratios (Table not shown).

5.4.2 Sentence Length, Criminal Deviance, Stress and Treatment Interactions

Proposition eleven asserted that impaired drivers with low self-control would be more likely to recidivate regardless of the amount of specific deterrence that they experienced. Proposition twelve posited that low self-control offenders would be less likely to respond to treatment, and proposition thirteen hypothesized that offenders involved in other crimes would be less able to manage stress and more likely to drink and drive again. These three propositions were explored by creating interaction terms between the indicator of other crimes and sentence length (specific deterrence), prior treatment (treatment), and perceived stress (stress). These three predictors were entered into a logistic regression with self-report DUI regressed on sentence length, prior impaired driving, other crimes, future crimes, alcohol consumption, residence change, perceived stress, negative social support, drinking avoidance strategies, and prior treatment.

Results provided negligible support for proposition eleven. As predicted, the main effect of sentence length was negative (reduced recidivism odds) and the direction of effect for the sentence length-other crime was positive. Both the main effects of sentence length (Exp(b) = .997, Wald= .189) and the sentence length/other crime interaction term (Exp(b)= 1.002, Wald= .072), however, had weak, unstable effects on drunk driving recidivism. Offenders with low self-control (as indicated by analogous other crimes) did not appear any more likely to be deterred than other drunk drivers.

Observed results also provided no support for proposition thirteen. The size of the main effect for stress did not change substantially with the introduction of the interaction term, but main effects became less stable (Exp(b)= 1.618, Wald= 1.768). The interaction term failed to display any interpretable effects (Exp(b)= 1.074, Wald= .031). Predatory offenders appear to experience stress in a manner similar to those specializing in drunk driving (Table appended).

Results were actually exactly the opposite to what was predicted by proposition twelve (Table 5.4). With the introduction of the interaction term, the main effects of treatment became stronger and more stable. The direction of the effect indicated that as treatment increased, however, so did the likelihood of recidivism. With each treatment level increase, the odds of recidivism increased by a factor of 1.85, although this effect was only moderately reliable (Exp(b)= 1.846, Wald= 2.970).

With the introduction of the interaction terms between other crimes and treatment, the main effects for other crimes also became stronger but was unstable. Net of the effects of other predictors, those convicted of other crimes had the odds of DUI recidivism increase by a factor of 3.6 (Exp(b)= 3.578, Wald= .392). However, treatment had only a negligible effect on predatory offenders. Subtracting the treatment interaction term from the prior treatment logistic coefficient, (.613 - .547= .066), results show that treatment did not appreciably increase the odds of recidivism for low self-control offenders. The interaction effect itself was moderate but not reliable (Exp(b)= .579, Wald= 1.649). Similar to results observed using official records in chapter four, offenders involved in other crimes are more likely to benefit from treatment than drunk driving specialists who have not been convicted of other crimes. Again, this tendency may be due to more serious alcohol addiction problems among drunk drivers. Offenders involved in other crimes may be more amenable to treatment intervention because their drinking may not yet have become severely debilitating.

Table 5.4 Subsample Reduced Form Logistic Regression with Other Crime and Treatment Interaction Terms

Variable	B	SE	Wald	Exp(b)
Alcohol Consumption	1.124***	.378	8.842	3.038
Impaired Driving History	.281*	.149	3.576	1.325
Other Crimes	1.275	2.037	.392	3.578
Changed Residence	-.468*	.289	2.659	.626
Perceived Stress	.481	.362	1.768	1.619
Employed	.882	.651	1.835	2.416
Negative Social Support	.737	.598	1.519	2.090
Drinking Avoidance Strategies	-.596***	.197	9.155	.551
Prior Treatment	.613	.356	2.970	1.846
Other Crimes*Prior Treatment	-.547	.426	1.649	.579
Constant	-5.323	2.253	5.582	

N= 128 Goodness of Fit X^2= 88.428 Pseudo R^2= .41 ***p<.01, **p<.05, *p<.10, one-tailed.

CHAPTER 6 DISCUSSION AND CONCLUSION

6.1 Major Findings

Propositions derived from theories of specific deterrence, low self-control and strain/stress found some support in our exploratory analysis of drunk driving recidivism. Longer sentences deterred offenders from repeat DUI (proposition 1, or P1), although the maximum deterrent effect appeared to be achieved at five to six months (150-180 days). Sentences of seven months or longer did not increase the deterrent effect. Offenders involved in prior deviant behaviours (previous drunk driving), analogous acts (predatory crimes) and pleasure seeking behaviors (alcohol consumption) were more likely to persist in drunk driving (P3). Effects were strongest and most stable for alcohol consumption, while drunk driving history showed moderately stable and consistent effects on repeat drunk driving. Involvement in analogous acts showed only a modest relationship with DUI recidivism. Age had a negative effect on repeat impaired driving in the official records data set, supporting proposition four. This effect was not replicated using self-report DUI measures.

Several propositions derived from Agnew's strain theory and Pearlin's health and illness stress theory received support. Perceived stress had a strong impact on self-reported drunk driving (P6). Registered Indians were moderately more likely to drink and drive again than Non-Aboriginals (P8). Métis status did not show a direct effect on recidivism. Social resources appeared to impact the likelihood of drunk driving by Aboriginals (P9). Registered Indians were much more likely to drink and drive if they received grade eight or less education, while Métis offenders had the odds of drunk driving increase significantly if they were unemployed.

Coping resources helped drunk drivers avoid repeat DUI in some cases (P7). As we might expect, the most consistent and effective coping resource was drinking avoidance strategies. Offenders who reported engaging in strategies to avoid alcohol

consumption and drinking situations were much less likely to report drunk driving. Associating with other drunk drivers (negative social support) had a moderate, but inconsistent positive association with drunk driving.

A number of theoretical indicators were not associated with impaired driving as various theories would suggest. Fine default status did not lead to more (or less) drunk driving, while intermittent status had a modest negative effect on repeat DUI, opposite to what was predicted (P2). These results may be explained by selection effects. Judges likely assigned low risk offenders to intermittent week-end sentences, and appeared moderately successful when they did so. Fine defaulters were self-selected into the custody system by their inability or unwillingness to pay fines. Their self-selection may make them a higher risk group, increasing the likelihood of reoffence regardless of their shorter sentence length.

Aside from Aboriginal status, other indicators of chronic stress had inconsistent or negligible effects on repeat DUI (P6). Chronic physical health problems had a minimal relationship with drunk driving. The absence of a driver's license showed strong but unreliable effects on repeat drunk driving. The poor reliability (large standard error) appeared due to the lack of cases (few offenders obtained a driver's license). Life event stressors of employment loss and social support loss did not affect DUI recidivism. This lack of effect may have been due to measurement problems in specifying employment loss, or in assessing social support. Again, a lack of cases in the small interview sample may have hindered measurement of consistent effects for changes in employment and marital (social support) status. Surprisingly, residence change did not act as a life event stressor, but instead had a distinct negative effect on repeat DUI. Moving to new places may have worked as a coping resource for offenders, who perhaps changed their residence to leave stressful situations or avoid opportunities or pressures to engage in excessive alcohol consumption. Stress was thought likely to have a greater effect on Aboriginals because

they have less social resources (P9), but results showed that Aboriginals were affected by stress in a similar manner to Non-Aboriginals.

Coping resources of education, social support, and physical health had negligible effects on recidivism (P7). More education, being married, or perceptions of good physical health did not impact the likelihood of repeat DUI. Furthermore, being employed appeared to slightly increase recidivism odds, opposite to what was predicted. The higher rate of recidivism for those working may have been due to the increased opportunity to drive drunk when employed. Having to travel to the work site, and simply having the money to purchase alcohol may create more situations where impaired driving can occur.

Treatment length was generally not an effective coping resource to deal with repeat drunk driving (P10). Paradoxically, more treatment appeared to be associated with an increased likelihood of recidivism. This effect appeared to be attributable to a selection effect in which high risk cases were assigned to more treatment, thus leading to higher recidivism rates for high treatment categories. An interaction effect was evident, however, when the effects of recent treatment were combined with a history of residential treatment, and then compared to those without prior in-house treatment. A cumulative effect of intensive treatment decreased the likelihood of recidivism. Contrary to proposition twelve, which was derived from the general theory of crime, predatory (assault, theft, fraud) offenders were more likely to benefit from treatment, suggesting they are more, not less "treatable." Conversely, offenders specializing in drunk driving were less likely to benefit from treatment.

Other exploratory hypotheses concerning low self-control offenders and drunk driving were not supported. Low self-control offenders (analogous acts, predatory crimes) were thought less likely to be affected by specific deterrence, because they are impulsive and have short time horizons (P11). Low self-control offenders were also predicted to react to stress and recidivate more, because they have lower frustration

tolerance (P13). Results showed, however, that offenders involved in other crimes were as likely to be deterred as impaired driving specialists, and that they were just as likely to be affected by stress.

Finally, an exploratory model examined the indirect effects of low self-control, stress and coping resources, through alcohol consumption, on repeat DUI. Results indicated that these theoretical indicators had only negligible indirect effects on alcohol consumption (P5). Only drinking avoidance strategies and negative social support had any substantive direct effects on alcohol consumption. This lack of effect may have been due to poor measurement of low self-control and stress. Yet if low self-control is considered an individual trait easily recognized by analogous acts, the lack of relationship between the pleasurable activity of drinking and other crimes is a serious deficiency. Furthermore, if perceived stress is a poor measure of stress, then why did perceived stress show such strong direct effects on drunk driving? Despite a strong alcohol consumption-DUI connection, it appears inaccurate to explain drunk driving as an indirect effect of stress through alcohol consumption. Rather, drunk driving appears to be a directly maladaptive response to stress.

6.2 Official Records and Self-Reports of the Persistence of Drunk Driving

In this exploratory analysis, official records and interview data were both used to examine propositions about drunk driving recidivism. Official records used a reoffence measure of recidivism, which was any new drunk driving conviction during a 24-45 month follow-up period for a sample of 692 incarcerated drunk drivers. Follow-up interviews conducted with a subsample of 145 drawn from the 692 cases, used self-reported reoffence (impaired driving) in the twelve months prior to the interview. Observations for these two samples, therefore, used different dependent variables. While the interview data was much richer on indicators of stress and coping, the records data had a much larger sample size. It is important to consider whether our differences in the observations based upon these two samples are a product of methodological effects such as sample

composition or whether differences in observations can be attributed to the type of outcome measure (official versus self-report), or the inclusion of different predictors in the analysis of interview data (e.g., fine default, intermittent, alcohol consumption, stress).

In fact, most of the observations yield similar results using official and self-report DUI recidivism measures. In both samples prior impaired driving convictions increased the likelihood of repeat DUI, while education and social support had little observed impact. Involvement in predatory crimes and employment both had somewhat stronger positive associations with recidivism in the interview data analysis than in the official record analysis. Conversely, sentence length had a moderately reliable negative effect on official recidivism in the records data, and a weak non-significant effect on self-report DUI, age went from a moderate negative effect to a negligible positive one, and treatment went from a strong positive association to a weak positive one. Registered Indian status was modestly related to official recidivism (Métis status was not), but the combined Registered Indian-Métis Aboriginal status indicator showed no effect in the interview data.

Possible explanations for these differences include group differences between the main sample and the interview subsample, use of official recidivism in one analysis and self-report in another, and use of different indicators in the two analyses. Differences between the main sample and subsample due to interview strategy are reviewed, and bivariate associations between interview status and deterrence, low self-control, stress and coping resource indicators are examined to evaluate the equivalency of the groups and size of potential differences. The greater the differences between the two groups, the greater the selectivity of responses one could expect from those interviewed. Multivariate analysis is used to compare the effects of similar indicators on official DUI recidivism between the larger records (N= 692) sample, and the 145 case interview subsample. The larger the discrepancies in predictor effects on the same dependent variable (official DUI conviction), the greater the differences that need to be explained between the two samples. Finally, results from multivariate analysis using similar indicator variables on the 145 cases

interview subsample are compared between the dependent variables of official recidivism and self-report reoffence. The hypothesis is that the greater the methodological effect of different types of recidivism measures (official drunk driving vs. self-report), the greater the observed difference in the magnitude and direction of predictor effects for the two equations.

6.2.1 Sampling and Reoffence

The overall study sample based upon records and interview subsample differed in several ways. The interview data set consisted only of "straight sentenced" offenders serving ninety days or more (no intermittent servers or fine defaulters). Half of the interviews were conducted with offenders on probation, parole or in custody. As we might expect for such a subsample, the "official recidivism" rate for the interview group was higher (33%, compared to 23% for the overall sample). Interviewed drunk drivers presented as a subgroup of more chronic, hardcore drunk drivers. Since this exploratory study's interest was in drunk driving persistence by serious impaired drivers, the more deviant nature of the interview group was suited to this purpose.

The "at-risk" period of the past twelve months for self-report drunk driving was much shorter than the 24-45 months "at-risk" follow-up period used to assess new convictions. This means the period studied for the overall sample was actually much longer than for the interview group. Still, the interview measure had the added advantage of being able to record some impaired driving episodes that were not detected by the police. This is likely one of the reasons why the interview subsample's twelve month self-report recidivism rate of 25% is only moderately lower than its 33% new conviction rate, over the previous 24-45 months accessed through records.

Caution should be exercised in emphasizing the differences between the two recidivism measures in this study. Self-report DUI and new drunk driving convictions in this study are not mutually exclusive. An offender could report a drunk driving episode

that resulted in an official conviction. Only 9 percent of the subsample reported driving impaired and not being charged, while 16 percent reported driving drunk and being convicted.

6.2.2 Statistical Comparisons

The study sample and interview subsample were not equivalent in terms of sentence severity and official recidivism. To extend this comparison, bivariate associations between interview selection (1=interviewed, 0=not) and indicator variables for specific deterrence, low self-control and strain/stress were examined (Table 6.1). Only three indicators showed even modest bivariate associations: sentence length (r= .14), residential treatment (r= .14) and treatment length(r= .20). Correlations between being interviewed and impaired driving history (r= .10) and involvement in other crimes (r= -.10) were small. Given the focus on straight-sentenced, more chronic offenders in the interview survey, it is perhaps surprising that differences were not larger. Straight sentenced inmates had longer sentences, and the longer sentences provided greater opportunity to take treatment.

6.2.3 Official Recidivism: Retrospective Sample and Interview Subsample Differences

Bivariate relationships and multivariate effects of specific deterrence, low self-control and stress on new drunk driving convictions (official records) were compared directly between the main sample and the subsample to appraise potential differences due to subsample selection (Table 6.2). Only three zero order correlations were substantially different at all and these differences were relatively minor. Slightly stronger (negative) effects of age and slightly weaker effects of prior treatment and treatment length were observed for the subsample. As expected, observed partial effects

Table 6.1 Bivariate Correlations Between Presence in Interview Subsample and Specific Deterrence, Prior Deviance, Stress and Coping Resources

Variable	r	Variable	r
Specific Deterrence		**Coping Resources**	
Sentence Length	.14***	Education	-.03
Prior Deviance		Employed	.08*
Impaired Driving History	.10**	Social Support	.04
Other Crimes	.10**	Residential Treatment	.14***
Age	.08*	Treatment Length	.20***
Stress			
Registered Indian	-.09*		
Métis	.02		
N= 692		***p<.001, **p<.01, *p<.05 (two-tailed).	

Table 6.2 Bivariate Correlations and Logistic Regression for New Impaired Driving Conviction Comparing Overall Sample with Interview Subsample

	Overall Sample				Subsample			
	r	B	SE	EXP(b)	r	B	SE	EXP(b)
Sent lgth.	-.01	-.002***	.001	.998	.06	.001	.001	1.001
Pr.DUI	.13***	.086*	.052	1.090	.12	.133	.116	1.142
Oth.Cr	.12***	.330	.210	1.395	.19*	.776*	.461	2.172
Age	-.12**	-.030	.013	.971	-.23	-.055**	.026	.946
Reg.Ind.	.18***	.437*	.244	1.548	.21*	.612	.557	1.851
Metis	-.03	-.138	.340	.871	-.01	.060	.676	1.062
Educ	-.06	-.022	.055	.978	.08	.209	.137	1.232
Empl.	.01	.309	.224	1.363	-.08	-.428	.503	.652
SocSu.	.09*	.201	.201	1.222	.01	-.195	.421	.823
PrTrt.	.20***	.684***	.216	.198	.10	-.014	.463	.986
Trt.Lgth.	.25***	.479***	.099	1.615	.18*	.254	.187	1.289
Trt. Yr.	-.08*	-.791***	.261	.453	-.13	-.926**	.407	.396
Constant	-.273	.803				-1.112	1.737	
Pseudo R^2		.50				.55		
Goodness of Fit		690.857				179.022		
N		692				145		

****p<.001, **p<.01, *p<.05, correlations two-tailed test, regression coefficients one-tailed test.*

were more unstable in the smaller sample. There was little evidence of selection effects in comparison of the determinants of reoffence.

In the logistic regression, the effects for other crime almost doubled, but effects remained in the predicted direction. Yet effects for both residential treatment and treatment length were smaller in the interview sample. Longer treatment still increased official DUI recidivism odds in both samples. Its effects were only half as large, however, in the interview subsample. As expected, the subsample treatment length effect was also relatively more unstable.

6.2.4 Official Records and Self-Report Recidivism Differences

Variation in effects due to measurement of the dependent variable (i.e., official records versus interview) were explored in a re-analysis of official records and interview data, using the 145 case subsample. First, estimates of deterrence, low self-control and stress bivariate associations were directly compared with official and self-report recidivism outcomes. Then, multivariate relationships were estimated in equivalent logistic equations using both official and self-report dependent variables (Table 6.3). To eliminate possible confounding effects, indicator variables specific to either data set were not used in any of the comparisons.

Age, Registered Indian status, treatment length and the control variable of treatment year all showed sightly larger effects on reconviction (vs. self-report reoffence). Introduction of statistical controls through logistic regression did not markedly change recidivism relationships observed in bivariate correlations. Net of other indicators, age had a strong negative relationship with official drunk driving recidivism, but showed little effect on self-report recidivism. Registered Indian status showed a stronger relationship with official drunk driving recidivism compared to self-report, but effects were unreliable in both equations, as were treatment effects. For this limited set of predictors, with the

Table 6.3 Bivariate Correlations and Logistic Regression Comparing Official Records and Self-Report Recidivism

	New Impaired Driving Conviction				Self-Report DUI			
	r	B	SE	EXP(b)	r	B	SE	EXP(b)
Sent lgth.	.06	.001	.001	1.001	-.04	-.001	.001	.998
Pr.DUI	.12	.133	.116	1.142	.14	.149	.113	1.161
Oth.Cr	.19*	.776*	.461	2.172	.20*	1.074**	.482	2.930
Age	-.23	-.055**	.026	.946	.01	.020	.023	1.020
Reg.Ind.	.21*	.612	.557	1.851	.10	.395	.570	1.485
Metis	-.01	.060	.676	1.062	.02	.333	.650	1.395
Educ	.08	.209	.137	1.232	.06	.140	.126	1.150
Empl.	-.08	-.428	.503	.652	-.06	-.192	.476	.826
SocSu.	.01	-.195	.421	.823	.03	.017	.420	1.017
PrTrt.	.10	-.014	.463	.986	.06	-.066	.452	.936
Trt.Lgth.	.18*	.254	.187	1.289	.06	.098	.186	1.103
Trt. Yr.	-.13	-.926**	.407	.396	02	-.098	.393	.907
Constant		-1.112	1.737			-3.900	1.705	
Pseudo R^2		.55				.36		
Goodness of Fit		179.022				138.986		
N		144				144		

****p<.001, **p<.01, *p<.05, correlations two-tailed test, regression coefficients one-tailed test.*

possible exception of age, results for the self-report drunk driving measure were similar to those obtained with official records of reconviction.

6.2.5 Discussion

Compared to the main retrospective sample, the interview subsample showed stronger effects for analogous acts (other crimes), little effects of age, no specific deterrent effect for sentence length, no effect of Aboriginal status, and no positive association with treatment coping resources. The more serious nature of offenders involved in the interview subgroup and the use of different recidivism measures in analysis helped explain these differences.

Half of the drunk drivers in the interview subsample had become re-involved in the justice system. Ipso facto, they were less amenable to deterrence. The more hardcore nature of many interviewed offenders also helps explain the stronger effects for "other crimes" in the interview group. The dichotomous nature of the other crime indicator did not allow careful distinction of offenders with more serious criminal histories in the retrospective sample. While the dichotomous measure was the same in the interview group, it was more likely to indicate offenders who had remained involved in predatory criminal activity, given that they were jailed or placed under community supervision. Finally, most interview respondents were involved in extensive treatment, which attenuated the treatment difference. The interview group consisted of a large proportion of offenders who did not respond to treatment.

Perhaps the most striking difference between official reconviction and self-report recidivism measures was their association with age. Age had a moderate negative effect on new drunk driving convictions but had little association with self-reported DUI. This difference may be attributed to reporting differences or differences in susceptibility to detection. It may be that younger drunk drivers are less willing to admit to driving drunk. Younger drivers may not be as experienced with the justice system, and may be more

concerned about possible detection through an interview response. Older drivers may appreciate the improbability of using a survey to check drunk drivers. Young adults may also be less confident and, in general, more concerned about social desirability. Older offenders may care little if anyone knows whether or not they drive drunk. Older drivers may also have learned to plan more carefully for possible drunk driving episodes, selecting drinking locations close by and less visible routes back home. In the event of more spontaneous drinking, older drivers may be more cautious and prudent when driving impaired, resulting in less frequent detection by police. Younger drivers may be more prone to impulsive, spur of the moment impaired driving to relieve stress. High-risk driving and impulsive behaviour is more prevalent among young males, and an increased rate of detection would also seem probable (Jonah 1986). Unfortunately, the small number of recidivists in the interview sample makes further inquiry into these explanations difficult.

These differences aside, the conformity between the predictor effects on official record and self-report outcomes are quite striking, particularly because they used different time periods (24-45 months versus one year). Criminologists are quite skeptical of official statistics, and argue that crime rates reflect police activity rather than actual offence numbers. Given that no directly affected victims exist to report drug use and drunk driving, official rates for these crime types may be particularly susceptible to police mobilization. Although official statistics may not yield accurate counts of drunk driving episodes, my results suggest that, for a simple yes-no measure of recidivism, new convictions are as effective a gauge for recidivism as self-report.

While my dissertation results are applicable to drunk driving recidivists, a comparison of official drunk driving and self report drunk driving rates also shows convergence in long term trends. From 1983-93, Canada's official drunk driving rates declined 35% (Birkenmeyer 1995). Self-reported drunk driving has declined remarkably as well, and at rate similar to official statistics. Comparing the results of national surveys

done in 1983 (Wilson and Jonah 1985) and the 1993 General Social Survey, the number of adult Canadians reporting that they drove drunk declined from 13 percent to 8 percent, a drop of 39 percent. Drunk driving may be a phenomena that is difficult to measure accurately, but official records on drunk driving are more accurate than might be thought and criminologists should not dismiss them.

6.3 Theoretical Implications

One of the strengths of this study was the use of three types of theories to include different domains of meaning in searching for explanations of drunk driving persistence. Specific deterrence examined assumptions that formal social control exercised by the state (punishment through sentence length) can reduce the likelihood of future deviant behaviour. The general theory of crime examined propositions based upon the assumption that socialization early in life leads to a life long individual trait of low self-control (involvement in prior drunk driving, predatory crimes, pleasure seeking behaviour), thereby increasing the likelihood of continued involvement in criminal and analogous acts. Building on Agnew's strain theory and medical sociology's stress theory, we also examined the perspective that social situations and social actors perceptions of these situations (Aboriginal status, chronic stressors, life event stressors, perceptual stress), affect persistence in deviant behaviour. Rather than focus solely on negative influences (stressors) on deviant behaviour, this exploratory study also considered the potential ameliorating effect of coping resources such as education, employment, social support and alcohol treatment on persistence in deviant behaviour.

Observations reported here were not intended to fully integrate different criminological theories into a single general explanation of DUI persistence. Data was not assessed to falsify some theories, or support others and "pick a winner" amongst competing theoretical perspectives. Our exploratory model was developed to assess a particularly deviant group (incarcerated drunk drivers), and examine differing explanations of their persistence or desistence in DUI behaviour. Observed results varied in their

support of propositions derived from these three theories. Findings have implications for all three theories tested in our model, and their potential use in furthering our understanding of drunk driving persistence.

6.3.1 Specific Deterrence

Deterrence theory posits that people seek pleasure and avoid pain. In this study, the pain of longer incarceration appeared to discourage the (presumably) pleasurable activity of drunk driving. Specific deterrence showed a moderate, consistent negative effect on repeat drunk driving. Sentence severity was also observed to be as effective for offenders with low self-control (analogous acts) as it was for offenders who specialized in drunk driving. Thus, longer sentences appear to represent sufficient pain to deter even offenders who have exhibited a greater commitment to a deviant life style. The length of the follow up period, (24-45 months) was reasonably long, indicating that deterrence is effective over a substantive time period.

In some respects results were surprising, given that specific deterrence through more severe punishments has not been well supported in the literature. Observations from the records data are all the more surprising because custody days represents only a crude specific deterrence measure. Sentence length does not tell us the proportion of sentence served, and among things that may have happened while in custody (e.g., work programs, involvement in the inmate subculture, recreation, disciplinary infractions). We were only aware of involvement in addictions and impaired driving programs. Despite these limitations, the effects of sentence length in discouraging repeat drunk driving were clearly evident.

Results provided support for Logan and Tittle's (1973) "tipping effect". Offenders serving four months or less were the most likely to reoffend. The effects of specific deterrence appeared to plateau at about five to six months. Sentences of a year or two years did not appear to have any greater deterrent effect. The finding of a punishment

threshold effectively limits the wholesale application of the deterrent principle of severity to suppress crime. Longer sentences appear suitable to deter impaired driving up to a point, after which longer sentences have little additional deterrent impact. These results are actually consistent with deterrence theory's severity principle as originally conceptualized by Beccaria (1764). As a reformer, Beccaria was a fervent advocate of less severe sentences. He felt that unnecessarily long sentences were counter-productive, and likely to bring the justice system into disrepute. Beccaria wrote at a time when excessive capital and corporal punishments were meted out by the courts for minor property crimes. For classical and contemporary "rational choice" scholars, severity would presumably best be limited to the amount necessary to deter individuals from future crimes. Longer sentences than necessary would be inefficient and waste social resources.

Results were mixed in considering the question of whether or not punishment varies in its deterrent effect according to the attributes of social actors. When interactions were examined, low self control did not appear to impact the effect of sentence length on recidivism. Those involved in predatory crime were just as likely to be deterred by sentence length as other drunk drivers. Still, differential effects of specific deterrence were evident when the smaller category of intermittent server was examined. Net of the effects of other predictors (including DUI history), drunk drivers sentenced to less onerous weekend sentences were still less likely to reoffend, contrary to the assumptions of specific deterrence. Weekend sentences were also much shorter than our deterrence threshold of six months, since under the Canadian Criminal Code, the maximum intermittent sentence is ninety days. This finding is likely due to a selection effect observed for intermittent servers. Judges administering a sentence appeared reasonably successful at determining which offenders only required short, intermittent sentences. This finding supports continued attention to the notion that individuals differ in their reaction to punishment. Clearly intermittent servers differ in some ways from other drunk drivers, and specific deterrence theory must be developed to account for this variation.

This exploratory study did not provide a thorough examination of deterrence theory. Individual perceptions, more specific information on prior experience with deterrence, and perhaps data on licence suspension, all are critical indicators that would provide a more rigorous evaluation of the influence of punishment on drunk driving recidivism. Results from this dissertation, however, did provide an excellent test of the effect of punishment on low self-control offenders. Sentence length bears directly on the general theory's assertions that punishment will not matter for analogous act offenders, but in fact, it did. Overall, observations from propositions derived from deterrence theory support renewed interest in the neglected principle of punishment severity. Specific deterrence models are recommended that address potential punishment thresholds and tipping effects. This exploratory study has illustrated the advantages of incorporating a diversity of theoretical perspectives to explain recidivism. Specific deterrence theory and its practical application should address different social situations and attributes of social actors to identify why some individuals require less punishment to discourage recidivism.

6.3.2 Low Self-Control and the Problem Behaviour Syndrome

Results for the general theory received partial support, but results overall fell far short of its claims to be a truly general theory of crime. Prior deviance (DUI history) showed moderate effects for both the main sample (N= 692) and the interview subsample (N= 145). Pleasure seeking behaviour (alcohol consumption) showed strong effects in the interview subsample. Surprisingly, analogous acts (other predatory crimes) had only modest, inconsistent effects in both samples. Analogous acts should be the strongest predictor according to the general theory of crime. Yet in this study, its effects were weak and unreliable. Increases in age were associated with some decline in drunk driving in the main study sample, but not in the self-report subsample. It may simply be that older offenders are less likely to be detected driving drunk.

Perhaps most importantly, recidivism overall was quite low for the sample. Given the central tenets of the general theory, a high recidivism rate would have been

anticipated. Despite a two to four year follow-up period, only 23 percent of all impaired drivers reoffended. For a group of offenders who averaged 2.5 prior drunk driving convictions, this proportion seems low. About 25 percent of the self-report group indicated that they drove drunk in the last year, again somewhat low considering that they were a somewhat higher risk subsample.

Low self-control theory makes ambitious claims. It purports to be a full-blown "general theory of crime" which explains involvement in deviance as due to an individual, life-long trait: lack of self-control. From this position Gottfredson and Hirschi argue against the use of deterrence, rehabilitation, or other efforts to change individual behaviour. They do not support integration with other criminological theories, claiming that the fundamental assumptions of most theories are too incompatible with others to be tested simultaneously.

The ambitious claims and adversarial position taken by Gottfredson and Hirschi in their explication of general crime theory make it more useful, precisely because it is more susceptible to falsification. According to the general crime theory, the effects of behavioural indicators of the low self-control trait should have been paramount over the effects of specific deterrence, stress and individual offender attributes. Yet a number of effects were observed for deterrence, perceived stress, avoidance strategies, employment and Aboriginal status, as well as interactions between Aboriginal status, education, and employment. Not only did sentence length deter individuals from reoffence, but also it worked just as effectively for those involved in analogous acts as other drunk drivers. Perceived stress effects showed that social actors respond to their perception of their social situation, and in the case of this study, reactions to significant stress levels increased the likelihood of reoffence. Again, those involved in analogous acts were just as likely to recidivate due to elevated stress levels as other drunk drivers. The positive association between employment and DUI recidivism is inconsistent with low self-control, as those with less self-control are expected to be less likely to be employed and more likely to

reoffend. The "non-effect" of education also is inconsistent with the general crime theory assumptions. Those with less self-control are assumed to be less likely to be academically inclined. Thus, the finding that those with less schooling were no more likely to recidivate than those better educated runs contrary to the claims of the general crime theory. Education and employment interacted with Aboriginal status (less educated Registered Indians, unemployed Metis more likely to drink and drive again) in a direction consistent with low self-control, however this interaction appeared due to the social circumstances confronting Aboriginals, again inconsistent with low self-control theory.

It might be countered that this study has not thoroughly measured low self-control. No social-psychological indices were used to attempt to distinguish self-control in the study sample. It is difficult to see this as a critical flaw, however, when the authors themselves contend that behavioural measures are the best to test their general theory. This dissertation had many strong features with which to test low self-control: a good-sized sample, punishment and treatment measures, stress measures, analogous acts, and both official and self-report recidivism measures. Most importantly, this research concerned drunk driving, which is a deviant behaviour that some have contended is different from predatory crimes, while others (such as Gottfredson and Hirschi) have argued it similar.

Results from our exploratory study do not support the view that low self-control provides a truly general theory of crime. Other theories appear to have much to offer in explaining persistence in deviant behaviours such as drunk driving. On the other hand, effects were still evident for such prior DUI, alcohol consumption and predatory crimes. These effects, however, are insufficient to warrant "partial" support for the general theory of crime. One of the strengths of the general theory of crime is that, Gottfredson and Hirschi stated, it is amenable to falsification. Lack of support for its central tenets would repudiate the notion of "low self-control." The modest effects of prior DUI and involvement in other crimes are inadequate to justify overlooking the rejection of other

propositions. Alcohol consumption showed strong effects, but alternative theories such as stress theory or social learning can provide more sophisticated explanations of this phenomena than "pleasure seeking."

Overall, the general crime theory made only modest contributions to my explorations of drunk driving recidivism. Results support rejection of this theory as an explanation of drunk driving recidivism. These findings have particular implications for scholarly work on drunk driving, as recently theorists in this field have been preoccupied with low self-control (Keane, Maxim and Teevan 1993), "problem behaviour" (Jonah 1990) and general deviance (Gould and Gould 1992) DUI explanations. Given the lack of strong findings for some low self-control traits, and no support for others, criminologists and other scholars may direct their attention more profitably to theories other than "problem behavior" to explain DUI persistence.

6.3.3 Strain/Stress Theory

My use of stress theory was derived from Agnew's strain theory and expanded upon Pearlin's stress theory. Observed results supported some aspects of stress theory. Stress perceived by impaired drivers had a strong, consistent effect on DUI recidivism. The strength of this effect was interesting given the mixed support for Agnew's strain theory in the literature, which has primarily used the affective state of anger to measure stress (Akers 1994). Still, Agnew (1992) himself has advocated the use of different measures of stress. Given the crudeness of the measures available in current research, future theory development of Agnew's strain theory using other, more detailed stress indicators (e.g., depression, anxiety) appears warranted.

Indicators of chronic stress showed modest or inconsistent effects. For example, even Aboriginal status had only weak effects on repeat drunk driving. Aboriginals were as likely to respond to perceived stress as Non-Aboriginals and Aboriginals appeared to be more likely to recidivate when they lacked personal resources such as education or

employment. In other words, most Aboriginals may be able to cope effectively with their Native status, and they may be more likely to persist in deviant behaviour because of social situations they face because they are Aboriginal. Theory development in the area of Aboriginals and stress should make greater use of Pearlin's idea of multiple stress indicators, to better specify the social situations that might lead Aboriginals (and Non-Aboriginals) to persist in deviance.

Study results showed variations between Registered Indians and Métis offenders in the observed likelihood of reoffence and their reaction to limited resources. This is not surprising, given that the social situations experienced by these Aboriginal groups are often quite different. These differences are consistent with stress theory's main proposition that social situations condition individual reactions to stress. In the very limited literature on Aboriginals, Registered Indian and Métis status usually are not distinguished because of data limitations. To properly develop strain and stress explanations of deviance, careful specification of Aboriginal status obviously is necessary.

Other chronic stressors showed limited or inconsistent effects. Physical health problems did not appear to lead to drunk driving persistence, but possibly because physical health precluded drinking or the activities associated with drunk driving (i.e., going to a tavern or another residence and drinking). Lack of a driver's licence showed strong but inconsistent effects, due to the small sample. In examining the impact (or lack thereof) of Aboriginal status and physical health chronic stressors, it may be that anticipated problems due to chronic stressors are overstated due to the ability of individuals to adapt to adverse situations. The emerging literature on resiliency suggests that many individuals may simply adapt to adversity, and, in some cases, develop new skills as a result of past problems (Richardson et. al. 1990). While it may seem less likely that hi-risk offenders who comprised our sample would adapt to adversity, it remains that many obviously did, given the relatively low official (23%) and self-report (25%) DUI recidivism rates.

Life event stressors of marital break-up, employment loss and residence change generally did not impact offenders in our interview subsample. Residence change had a negative effect (reduced the odds of DUI recidivism), opposite to what was predicted. Part of the lack of effect may be attributable to the small sample, the low number of stressful life events, and difficulty in accurately measuring situations that are truly stressful events. Life events used in the study might in some cases be stressful, in other cases they might be purposeful action to reduce stress. In the case of a negative relationship, a bad job or unfavourable living circumstances, leaving the situation would relieve, not increase stress. Of course in other instances, being told to leave a relationship, being fired from a job or constantly adapting to new surroundings would constitute a stressful life event. To adequately account for the influence of stressful life events, indicators that more clearly outline these situations and the social actors perception of them are needed. It would also be prudent to consider the potential effects of resiliency on stressful life events. Offenders may be impacted negatively by stressful events, but may develop positive adaptations from their experience.

6.3.4 Coping Resources

Stress theory posits that coping resources will condition and limit the impact of chronic and life event stressors on individuals, in turn limiting negative stress outcomes (in our case, repeat drunk driving). Coping resources that generally did not diminish the odds of DUI recidivism included education, employment, social support and treatment programs. In fact, employment and treatment programs tended to be associated with increased odds of DUI recidivism. The lack of education effect may relate to the lack of variation within the sample, as the vast majority of offenders had completed grade ten or eleven. Caution should be exercised in interpreting the employment effect, which was moderate but not consistent. Employment, however, may have facilitated repeat DUI by creating some of the conditions conducive to drinking and driving: regular travel outside the home, and funds to purchase alcohol. Another possible explanation for the lack of positive support received from employment is that a job situation may be negative,

increasing rather than reducing stress. For social support, the crudeness of our measure may have affected results. Being married or living common-law does not guarantee positive support from a spouse. Similarly to a negative job situation, a personal relationship may be negative and hence, create stress and increase the likelihood of drinking and driving. In developing their age-graded control theory, Laub and Sampson (1993) have commented on the need for strong measurement to distinguish positive relationships from negative ones, and good jobs from bad ones, to help explain crime desistence.

Paradoxically, increased treatment was associated with increased recidivism. There were only two exceptions to this trend. Offenders involved in analogous acts tended to benefit more from treatment than those specializing in impaired driving. Offenders who completed at least two intensive in-house treatment regimes were also less likely to drink and drive, providing some evidence that involvement in addictions treatment can work as a coping resource. Overall, however, evidence from this study pointed to a selection effect that meant those who were involved in the most treatment were the highest risk cases. These risky cases were likely the most resistant to treatment, resulting in higher recidivism rates. With respect to stress theory development, study results suggest that use of treatment programs as a coping resource indicator should proceed with caution. Pre-treatment assessment of addictions levels might help identify individuals with greater potential for post-treatment success.

Gaining employment or becoming involved in a marital or common-law relationship during the study follow-up period were used to represent potential coping resources. Interview sample size inhibited the assessment of these indicators, as well as their inter-correlation between current employment and current social support. Gaining employment (going from unemployed to employed status) had a moderate but unstable effect in the predicted direction, suggesting that purposeful changes in life situations can impact a stress outcome like drunk driving. Better measurement of the types of

employment situations that have ensued, and the type of relationships entered into, would enhance development of stress theory.

Negative social support (being a passenger in drunk driver's car) had a modest, inconsistent effect on DUI recidivism. This effect illustrates the utility of conceptualizing social support not simply as a positive resource, but also as a possible negative factor. Deciding to associate with drunk drivers is likely construed by the individual actor as a positive resource (having friends, sharing activities, etc.). In terms of the eventual outcomes (repeat drunk driving and possible arrest), the influence of others who drink and drive was obviously negative. The concept of negative social support might also be extended to significant others, such as spouses who drink, drink excessively, or whom condone or encourage drinking and driving.

Avoidance strategies had a strong, consistent negative effect on repeat drunk driving. Purposeful action by individuals to avoid alcohol and drinking situations was the most powerful coping resource observed in my study. Stress theory development should look to measure and capture purposeful strategies and actions by individuals trying to change maladaptive behaviours or avoid negative stress outcomes. Determining linkages between purposeful strategies and social situations and life events would further enhance theory and our understanding of successful coping with stress.

6.3.5 Directions for Theories on Drunk Driving Recidivism

In my dissertation, the strongest and most consistent relationships with drunk driving recidivism were those associated with alcohol consumption. In the official records sample, the treatment variables showed moderately strong effects, but appeared to work as indicators for offenders with the greatest alcohol related problems (i.e., more treatment for those with more problems). In the interview subsample, alcohol consumption and drinking avoidance strategies had the largest and most reliable effects. Stress showed a

moderate bivariate relationship with drunk driving, and a somewhat larger effect in the logistic regression. Still, evidence suggests that prediction of drunk driving recidivism best comes from knowing who will drink the most. Psychologists have argued that drunk drivers are themselves a heterogenous group (Donovan et. al. 1985, Saltstone 1989, Wilson 1991), and hence different theories will explain their involvement in DUI. Investigators argue that some drunk drivers are alcoholics, some are predatory criminals, while yet others are problem drinkers looking for excitement. While I do not comment here on drunk drivers generally, I assert that, with respect to drunk driving recidivists, my study's findings point to alcohol consumption as the key factor influencing persistence.

This key factor brings us back to a larger question about drunk driving relative to other crimes: is it similar to predatory crimes, and if not, then what implications does this difference have for theory? The general theory of crime may ring true for many violent and property offenders, but this study generally disconfirmed it. The general theory has linked age to crime, and indeed the extant research shows a robust relationship between age and predatory crime. In this study, however, the official records showed only a modest age-DUI relationship, while no relationship existed in the self-report subsample. Other research has suggested that the onset of frequent drunk driving and subsequent recidivism tends to start in the age range 26-30, likely because this period is when more serious problem drinking occurs (Miller and Windle 1990). This conclusion brings us back to alcohol consumption as a more salient explanation for drunk driving persistence.

Recent macro level strain theories suggest that white collar or street crime offenders are motivated by a cultural preoccupation with wealth (Messner and Rosenfeld 1992), while Agnew (1992) views property crime and violent crime as occurring at the individual level due to frustration from goal blockages or noxious stimuli. Drunk driving is an offence where profit does not appear to be a motive. While patterns clearly develop for recidivists to overindulge and then drive home, even when their licence is suspended, the event itself appears to result in little gain except for immediate convenience.

Generally, unemployment is a source of strain at the macro or micro level, and has shown a strong to moderate inverse relationship with recidivism for predatory offenders. In my dissertation, however, being employed was positively associated with driving drunk. This reality was likely due to the increased opportunity to purchase alcohol and a motor vehicle that a job income provides. While strain theory (as typically conceptualized for predatory offenders) may not be salient to DUI, stress measured at the individual level showed a moderate relationship with DUI recidivism. Although these effects do not appear to merit a significant shift in focus to stress as a drunk driving explanation, my dissertation findings give modest support to continued attention in this area.

Using a somewhat crude measure, deterrence theory (or the pursuit of pleasure while weighing the risks of pain), helped explain a modest amount of repeat drunk driving, but the more noteworthy observation was the weak effect of both deterrence and treatment on offenders. For those who had the most serious drinking problems, repeat DUI was more likely. Sentence length showed only a moderate dampening effect on the odds of recidivism. This effect may relate again to the lack of severe social censure associated with drunk driving.

To explain drunk driving recidivism, low self-control and deterrence theories appear to offer limited value. Among mainstream criminological theories, Agnew's individual level strain theory offers the most hopeful avenue of inquiry, yet even here study findings suggest limited gains. Much more promising is inquiry that focuses on alcohol consumption. Persistence and desistence of drunk driving in this dissertation were most closely linked with drinking behaviour, and strategies to avoid drinking. Research in the area of medical sociology, examining stress, and other precursors of drinking behaviour may provide much more insight into why people drink and drive, and why they stop. Excessive alcohol consumption, which the research field views as a deviant (as opposed to criminal) behaviour, would serve as a more useful starting point for a sociologist. From excessive drinking, linkages might be more clearly established to driving while drunk.

6.4. Policy Implications

6.4.1 Specific Deterrence

Deterrence theorists generally advocate more punitive responses by the justice system, especially when the principle of severity is considered. My observations, which support some aspects of specific deterrence, actually endorse an overall use of less onerous dispositions to deal with drunk drivers. Consistent with the severity principle of deterrence that asserts that no more punishment be used to sanction an offence than is necessary, study results support sentences of six months. Consequently, offenders serving five months or less would serve longer sentences. Offenders serving more than six months, however, would receive shorter sentences, resulting in less onerous dispositions overall, and significant cost savings to the corrections system. To test this policy, I calculated the average drunk driving sentence length for the 514 offenders who served straight time custody sentences. I then compared this mean to the hypothetical average overall sentence length if offenders serving more than six months and less than six months had their sentences reclassified to a modal sentence length of six months (180 days). The average drunk driving sentence was 249 days (s.= 196). Using the recommended modal sentence length of 180 days for all cases, the average overall days saved would be 70 days, or over two months.

Implementation of a six month mandatory penalty may be limited by the need for public denunciation, particularly in cases where extensive property damage, injury or death has resulted from an impaired driving offence. For the majority of cases, however, where no injury and only minor property damage has occurred, a six month sentence would not be disproportionate to the amount of social harm. Impaired drivers also face other escalating penalties for repeat DUI. In addition to increased insurance premiums, licence suspension lengths are generally extended for new convictions by provincial Motor Vehicle agencies.

Another limitation on use of shorter sentences is the strength of study findings. Given the moderate deterrent effect that this study observed, six month sentences may work effectively only with a small number of offenders, limiting the policy relevance of results. Replication of this study, examining more carefully offenders who are susceptible to a "tipping effect," would provide greater confidence and guidance in developing a policy of shorter drunk driving sentences.

Use of intermittent weekend sentences, as an alternative to lengthier straight time custody terms, also was supported by study findings. It is evident that the courts do a reasonable job of identifying suitable risks for assignment to weekend sentences.

Results in our study are not conclusive concerning fine defaulters, but they are a nebulous group. Net of other factors, enforcement of fine default status does not appear to promote recidivism. Data allowing for comparison of fine defaulters to drunk drivers who pay their fines would be necessary to assess policy in this area.

6.4.2 Low Self-Control

Gottfredson and Hirschi have advocated that policies based on deterrence and rehabilitation are useless because the trait of low self-control is a lifelong condition that declines (but does not disappear) with age. They argue that the trait of low self-control is so general and the rate of decline so random, that attempts to identify higher and lower risk cases is futile. Contrary to their assertions, however, study findings support policy that promotes the classification of offenders.

There were clear and distinct differences in the odds of recidivism based on low self-control principles and deterrence and rehabilitation interventions based on other theories. Offenders involved in other predatory crimes were at greater risk to drink and drive again. Offenders who consumed more alcohol were at much greater risk of reoffence. Sample members who specialized in drunk driving were more resistant to

treatment than predatory offenders. Contrary to low self-control assumptions, deterrence did impact the probability of reoffence. Selection of low risk offenders (intermittent servers) was done successfully at the point of sentence. Rather than the pessimistic, mindless ritual processing justice system policies envisioned by proponents of low self-control, study results suggest that interventionist policies have considerable potential to more effectively manage drunk drivers and reduce persistence in DUI. Stress theory findings provide further support for these types of policies.

6.4.3 Strain/Stress Theory

Perceived stress consistently increased the likelihood of DUI recidivism amongst the sample group. Given the overall poor outcomes for treatment programs, findings obviously point to greater emphasis on stress management in the development of drunk driving program curriculums. Dealing more effectively with stress or avoiding stressful situations would serve to reduce the odds of DUI recidivism. Stress management is recommended that is directed at the drunk driving response, however, as opposed to the common starting point of alcohol consumption. In our examination of the proposed theoretical model that tested the indirect effects of stress (through alcohol consumption), it was discovered that there was only a negligible relationship between drinking levels and stress. Although this weak association could be due to measurement problems, inconsistent findings in the alcohol-stress literature suggest that this relationship may not be as strong as supposed. Given the lack of consistent support for a stress-alcohol approach, it may be more profitable to focus on the stress-DUI response in treatment situations, rather than solely on the stress-alcohol response.

As a crime, each drinking and driving episode constitutes an event with three features: an offender, consumption of alcohol, and an automobile. Interventions tried deterring the offender through punishment, changing drinking behaviours by treatment, and limiting opportunity or access to automobiles through licence suspension. Study findings indicate that the most important strategies are those aimed at reducing alcohol

consumption and avoidance of drinking situations. Less drinking and more active strategies at alcohol avoidance consistently lowered the odds of recidivism. It obviously matters if offenders learn and apply coping mechanisms to reduce or avoid alcohol consumption. Consequently, results support treatment regimes that deal not only with physiological and social needs associated with alcohol consumption, but more pragmatically, programs should work at a fundamental level whereby offenders can proactively design strategies that will reduce opportunities for drinking. The findings also support other types of deterrence, but the strongest gains for reducing drunk driving recidivism appear to lie in the area of alcohol consumption.

The lack of positive support from social support, and the modestly positive association between DUI and both employment and negative social support indicates that treatment should address these factors. From a stress perspective, offenders could be instructed on dealing with difficult work situations, as well as stressful work and personal relationships that might lead to drunk driving. From the alcohol consumption perspective, offenders need to learn to manage potential work, personal, and family situations that might encourage drinking or lead to drunk driving situations.

6.5 Future Research: The Career Approach to the Study of Drunk Driving

Exploratory studies are intended to heuristically examine theories and methods and identify profitable avenues for further research. In spite of data limitations due to official records, the interview sample size, and the crudeness of some theoretical indicators, our study managed to ascertain several potential areas for future research.

Deviant populations in areas such as street crime and drunk driving tend to work their way through a career funnel. The career begins with the onset of deviant behaviour, persistence in crime, and finally desistence. Activity appears to peak in the late teens to early twenties and then steadily declines. Criminologists have contributed a number of theories and many empirical studies concerning themselves with the etiology of juvenile

delinquency, a stage generally associated with the onset of a criminal career. More recently, criminologists have focused greater attention on adult offenders, and the various factors influencing their persistence or desistence from crime at various points in the life cycle (Blumstein, Farrington and Cohen 1988; Gould and Gould 1992; Laub and Sampson 1993; Osgood et. al. 1988). At the broader theoretical level, the career perspective necessitates an examination of the influence of many social factors, life circumstances and social situations of offenders. The influence of age at different points in the life cycles are also critical to understanding external influences on crime persistence and desistence (Laub and Sampson 1993; Osgood et. al. 1988). Methodologically, the career perspective necessitates use of longitudinal research designs that incorporate carefully measured indicators to examine the strength of various theories to help explain persistence and desistence.

My exploratory study helped illustrate the utility of a career approach to understanding persistence and desistence in drunk driving behaviour. There was considerable desistence from both official and self-reported impaired driving in both our sample groups. The use of indicators from different theoretical domains helped us gain considerable insight into why some offenders persisted in drunk driving. Sentence length and treatment indicators allowed for assessment of the impact of the criminal justice system on DUI recidivism. Low self-control theory allowed for some assessment of the influence of prior deviance on future deviance. The use of self-report measures added to our ability to examine theories such as stress which better capture the influence of social circumstances and situations on drunk driving persistence.

Longitudinal studies of DUI persistence (or other types of crime) should develop more detailed measures of specific deterrence, stress, and coping resources, attempting to capture the social actor's perceptions of their circumstances wherever possible. Specific deterrence should measure punishment severity not only in the quantitative sense (e.g., sentence length, fine amount) but also the offender's perception of the sentence and its

degree of punitiveness. Life events that occur after the sentence (e.g., treatment programs, work programs, prison discipline, parole, amount of sentence served) and their potential conditioning effect on punishment should also be assessed. Larger samples that could assess the influence of different factors at different life stages (i.e., 20-25, 26-30, 31-35, etc.) also are supported.

Longitudinal studies would enable survival analysis of drunk driving persistence. Tracking of time to failure rates for impaired drivers could provide a measure of the relative effectiveness of treatment interventions. For example, offenders may avoid drunk driving for longer periods of time if they are on an ignition interlock program (in-car breathalyser device) than if they took a counseling program (Weinrath 1996). Survival rates also would allow for more direct linkages between chronic stressors, life event stressors, changes in social situations, and their impact on drunk driving persistence.

Future research also should use multiple stress measures, and assess potential stress sources. Thus anxiety, depression, and alienation might have different effects on repeat drunk driving. Implications for remedial action (type of treatment) would be better captured by such measurement.

Coping resources did not have as much impact on DUI recidivism as anticipated. It was speculated that these weak relationships may be due to the fact some coping resources (employment and marriage/common-law relationship) may in fact have been stressors. Better measurement of social support (e.g., quality of relationship, ability to confide), and indicators assessing the offender's perception of available social support would provide further insight into the influence of coping resources on drunk driving persistence. Such measurement could also address the possible influence of negative social support by drinking companions, or family members who drink. Resiliency models, and their use as a possible explanation for crime desistence in the face of negative life events, also should be examined.

Aboriginal offenders were slightly more likely to drink and drive, and their recidivism was impacted in different ways by a lack of social resources. Classification of Aboriginals into Registered Indian and Métis offenders produced much different results. Future research should ensure this distinction in Aboriginal status is made, and more generally assess Aboriginal perceptions of their social circumstances, possible differences with Non-Aboriginals, and the influence these differences might have in crime persistence.

This study has focused on male drunk drivers. Although they make up a smaller group, female impaired drivers and their DUI persistence is an area receiving increasing attention in the literature (Essex, Dawn and Yu 1992; Keane, Maxim and Teevan 1993). Again, possible differences in women's interpretation of their life circumstances, reaction to stressors, and their response to specific deterrence and treatment coping resources is an area that merits attention. In future research on male impaired drivers, interviews with female spouses or significant others, and their perceptions of the offender and their own current life circumstances, would provide a very useful information source, and an opportunity to validate male offender self-report data.

Official records will continue to be an important source of data on impaired drivers. Self-report studies and their use in longitudinal studies will likely provide more insight into DUI behaviour over the long term. Of value from our exploratory study is the demonstration that using both official and self-report crime measures in the same study can serve to cross-validate findings, and help evaluate the influence of the types of measures we use on results. Where possible, it is recommended that DUI research utilize appropriate official records to support self-data.

6.6 Conclusion

This exploratory study of drunk driving persistence had identified important implications for the development of sociological theory, pointed to policies that can ameliorate the justice system's management of drunk drivers, and specified several

promising areas of future research. To reduce DUI recidivism, policies are endorsed that support modal sentence lengths, intermittent sentences, offender classification based on risk estimates, and treatment regimes that incorporate stress management and drinking avoidance strategies. Future research is recommended that uses a career criminal perspective. Longitudinal studies that use different theories, effectively measure life events, criminal justice interventions, social situations and offender perceptions of these situations should serve to guide theory and policy development, and most importantly, help us understand why some offenders persist in socially harmful behaviours such as impaired driving.

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APPENDIX A

Table A 1.1 Variable Description for Official Records Correlation Matrix

Variables
New Drunk Driving Conviction (1=yes, 0=no)
Sentence length (1,2,3...)
Fine Defaulter (1=yes, 0=no)
Intermittent Server (1=yes, 0=no)
Prior Drunk Driving (0,1,2...)
Other Crimes (1=yes, 0=no)
Age (1,2,3...)
Registered Indian (1=yes, 0=no)
Métis (1=yes, 0=no)
Education (1, 2, 3...)
Employed (1=yes, 0=no)
Social Support (1=married or common-law, 0=single, divorced or widowed)
Prior Residential Treatment (1=yes, 0=no)
Treatment Length (0=2wks, 1=3wks., 2=4wks., 3=6wks.)
Time Since Treatment (0=1989, 1=1990, 2=1991)

Table A1.2 Correlation Matrix for Official Records Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. New DUI Conviction	-														
2. Sentence Length	-.01	-													
3. Intermittent Server	-.09*	-.30***	-												
4. Fine Defaulter	-.01	-.30***	-.15***	_											
5. Prior DUI	.13***	.27***	-.13***	-.35***	-										
6. Other Crime	.12***	.23***	-.17***	-.15**	.18***	–									
7. Age	-.12**	.11**	-.04	-.16***	.22***	-.11*	-								
8. Registered Indian	.18***	.09*	-.12**	-.05	.16***	.13**	-.16***	-							
9. Metis	-.03	-.03	-.09*	.04	-.01	.05	-.01	-.19***	-						
10. Education	-.06	-.06	.13**	.04	-.05	-.05	-.12**	-.21***	-.19***	-					
11. Employed	.01	-.04	.08*	-.08*	-.06	-.10*	-.10**	-.14***	-.08*	.11**	-				
12. Social Support	.09*	.01	-01	-.02	.12***	.05	-.03	.15***	.04	-.04	.05	-			
13. Prior Residential Treatment	.20***	.25***	-.11**	-.20	.24***	.23***	.03	.18***	.07	-.12**	-.07	.08*	-		
14. Treatment Length	.25***	.30***	-.19***	-.19***	.28***	.22***	.01	.20***	-.01	-.07	-.07	.05	.34***	-	
15. Time Since Treatment	-.08*	.20	-.11**	-.12***	.08*	.16***		.16***	.03	-.01	.05	.05	.09*	.17*	-

***p<.001, **p<.01, *p<.05. two-tailed.

Table A.2.1 Variable Description for Self-Report Subsample Correlation Matrix

Variable	Variable
Specific Deterrence	**Perceptual Stress**
Sentence Length (1, 2, 3, ... in days.)	Perceived Stress (0...7)
Prior Deviance	**Coping Resources**
Excessive Drinking (0=abstinent, 1=twice a month or less, 2=once to three times a week, 4=four to seven days a week.)	Age (1,2,3,... in years)
Impaired Driving History (1,2,3,... prior convictions.)	Education (1,2,3,...by grade level)
Other Crimes	Employed
Chronic Stressors	Gained Employment
Aboriginal Status	Feel Healthy
Chronic Health Problems (0=no problems, 1,2,3 index severity.)	Social Support
No Valid Driver's Licence	Gained Social Support
Life Event Stressors	Negative Social Support
Lost Employment	Prior Treatment (0=some, 1,2,3, 4,5,6,7 levels of experience)
Lost Social Support	Drinking Avoidance Strategies (0=no effort, 1=one strategy, 2= two strategies, 3=three strategies,, 4=four strategies, 5=five strategies.)
Changed Residence Last Two years (0=never, 1=once, 2=twice, 3 = three or more.)	

Unless otherwise indicated, variables are coded dichotomously

Table A.2.2 Correlation Matrix for Interview Subsample

	1	2	3	4	5	6	7	8	9	10	11	12
1. Drove Drunk	-											
2. Sentence Length	-.04	-										
3. Alcohol Consumption	.43***	-.20*	-									
4. Prior DUI	.14	.08	.05	-								
5. Other Crime	.20*	.08	.05	.11	-							
6. Aboriginal	.10	.01	.08	.08	.25**	-						
7. Chronic Health	-.05	.07	-.03	-.08	-.02	.04	-					
8. No Licence	.15	.11	.12	.06	.21*	.13	.06	-				
9. Lost Job	-.09	-.07	.05	-.10	.01	-.02	.19*	-.04	-			
10. Lost Social Support	.06	.07	-.01	.04	.19*	.02	.02	.14	-.04	-		
11. Moved	.01	.16	.03	-.15	.14	-.11	.01	.17*	.02	.24**	-	
12. Life Dissatisfaction	.15	-.07	..09	-.08	..13	-.07	.20**	.23**	.17*	.24**	.24**	-
13. Perceived Stress	.16	.03	.02	-.02	.03	-.13	.14	.04	.05	.13	.12	.28***
14. Stress/Life Dissatisfaction	.19**	-.03	.07	-.06	.10	-.12	.21*	.17	.14	.23**	.23***	.80***
15. Age	.01	.07	.04	.06	-.21**	-.20*	-.26**	-.18	-.03	-.02	-.15	.06
16. Education	.06	-.04	.01	.05	-.04	-.21**	-.20**	.07	-.14	.06	-.04	-.07
17. Employed	.04	.08	-.08	.08	-.09	-.08	-.35***	-.04	-.76***	.03	-.05	-.25**
18. Gained Job	.01	-.04	.03	-.07	.11	.07	-.02	-.06	-.19*	.09	.06	-.02
19. Perceived Health	-.12	.06	-.15	.02	-.09	-.08	-.25**	-.08	-.09	-.01	-.11	-.29***
20. Social Support	.02	.01	-.09	-.05	.01	.12	-.08	.01	-.02	-.40***	-.08	-.16
21. Gained Social Support	.05	-.04	-.02	-.22**	.04	.05	-.04	-.05	-.10	-.16	.01	-.03
22. Negative Social Support	.24**	-.04	.25**	.04	.07	.06	.11	.11	-.14	.13	.29***	.22**
23. Treatment	.08	.22**	-.11	.16	.24**	.26***	.05	.06	-.06	-.15	.02	-.06
24. Drinking Avoidance Strategies	-.34***	-.06	-.44***	.10	.02	-.14	.10	-.06	.13	.07	-.12	.05

****p<.001, **p<.01, *p<.05. two-tailed.*

(continued)

Table A.2.2 Correlation Matrix for Interview Subsample

	13	14	15	16	17	18	19	20	21	22	23	24
1. Drove Drunk												
2. Sentence Length												
3. Alcohol Consumption												
4. Prior DUI												
5. Other Crime												
6. Aboriginal												
7. Chronic Health												
8. No Licence												
9. Lost Job												
10. Lost Social Support												
11. Moved												
12. Life Dissatisfaction												
13. Perceived Stress	-											
14. Stress+Life Dissatisfaction	.80***	-										
15. Age	.08	.08	-									
16. Education	-.04	-.01	-.14	-								
17. Employed	-.20	-.14	-.07	.29***	-							
18. Gained Job	.04	.08	-.06	-.01	.26**	-						
19. Perceived Health	-.16	-.07	-.02	.26	.20*	.01	-					
20. Social Support	-.10	-.06	-.12	-.11	.04	-.02	.03	-				
21. Gained Social Support	-.04	-.03	-.08	-.15	.09	.14	-.04	.39***	-			
22. Negative Social Support	.25**	.23**	-.08	.09	.06	-.06	-.14	-.11	.03	-		
23. Treatment	-.10	-.06	-.02	-.03	-.01	.03	.13	.14	.12	.05	-	
24. Drinking Avoidance Strategies	.13	.09	.01	-.16	-.09	-.02	-.01	.09	-.08	-.17	-.02	-

****p<.001, **p<.01, *p<.05. two-tailed.*

Table A.3 Subsample Logistic Regression For Self-Reported DUI

Variable	B	SE	Wald	Exp(b)	Variable	B	SE	Wald	Exp(b)
Deterrence					**Coping Resources**				
Sentence Length	-.001	.002	.104	.994					
Prior Deviance					Education	.018	.233	.006	1.019
Impaired Driving History	.335**	.160	4.390	1.398					
Other Crimes	1.236*	.729	2.879	3.443	Employed	1.220	1.203	1.027	3.385
Alcohol Consumption	1.308***	.424	9.547	3.700	Gained Employment	-.785	1.038	.572	.456
Age[a]	-.028	.048	.327	.973	Health	-.665	.678	.961	.514
Chronic					Social Support	.690	.713	.937	1.993
Stressors									
Aboriginal Status	.614	.842	.532	.541					
Chronic Health	.217	.320	.461	1.242	Gained Social Support	-.157	1.043	.023	.855
No Valid Driver's Licence	1.161	1.305	.791	3.192	Negative Social Support	.681	.645	1.115	1.976
Life Event Stressors					Prior Treatment	.196	.199	.968	1.217
Lost Employment	-.138	1.238	.013	.871					
Lost Social Support	.665	.984	.456	1.944	Drinking Avoidance Strategies	-.686***	.239	8.230	.504
Changed Residence Last Two years	-.754**	.379	3.954	.471					
Perceived Stress					**Constant**	-5.444	3.595	2.293	
Stress	.435*	.236	3.390	1.544					

N= 123 Goodness of Fit = 76.96 Pseudo R^2= .39 ***p<.01, **p<.05, *p<.10, one-tailed.

[a]Also used as an indicator for the coping resource of maturity.

Table A.4 Subsample Reduced Form Logistic Regression with Aboriginal and Stress Interaction Terms

Variable	B	SE	Wald	Exp(b)
Alcohol Consumption	1.218***	.394	9.583	3.381
Impaired Driving History	.276*	.148	3.496	1.318
Other Crimes	.780	.614	1.616	2.182
Native	1.002	1.772	.320	2.725
Changed Residence	-.118	.316	.139	.889
Native*Changed Residence	-1.201**	.593	4.106	.301
Perceived Stress	.505**	.256	3.871	1.656
Native*Perceived Stress	.087	.422	.043	1.091
Employed	.854	.685	1.554	2.348
Negative Social Support	.878	.618	2.020	2.407
Drinking Avoidance Strategies	-.598***	.198	9.121	.550
Constant	-5.516	1.679	10.800	

N= 128 Goodness of Fit X^2= 89.347 Pseudo R^2= .41 **p<.01, **p<.05, *p<.10, one-tailed.

Table A.5 Subsample Reduced Form Logistic Regression with Other Crime and Deterrence, Stress and Treatment Interaction Terms

Variable	B	SE	Wald	Exp(b)
Alcohol Consumption	1.111***	.388	8.194	3.038
Impaired Driving History	.281*	.149	3.576	1.325
Other Crimes	1.275	2.037	.392	3.578
Sentence Length	-.003	.060	.188	.997
Other Crimes*Sentence Length	.002	.006	.072	1.002
Changed Residence	-.468*	.289	2.659	.626
Perceived Stress	.481	.362	1.768	1.619
Other Crimes*Stress	.072	.408	.031	1.074
Employed	.882	.651	1.835	2.416
Negative Social Support	.737	.598	1.519	2.090
Drinking Avoidance Strategies	-.596***	.197	9.155	.551
Prior Treatment	.613	.356	2.970	1.846
Other Crimes*Prior Treatment	-.547	.426	1.649	.579
Constant	-5.323	2.253	5.582	

N= 128 Goodness of Fit X^2= 88.428 Pseudo R^2= .41 ***p<.01, **p<.05, *p<.10, one-tailed.

APPENDIX B

INFORMED CONSENT

AND

INTERVIEW GUIDE

CONSENT FORM

RELEASE OF INFORMATION

RESEARCH PROJECT: EVALUATION OF ALCOHOL ADDICTIONS AND IMPAIRED DRIVER'S PROGRAMS

I, _____, understand that an evaluation of alcohol addictions and impaired driver's programs is being conducted by the Alberta Department of Justice. The evaluation is intended to see if these programs are helping participants.

As part of this evaluation, I understand that I will be interviewed and asked questions relating to my experience at the program(s), as well as general questions relating to alcohol consumption and background.

Information provided by me as part of this study will be kept in strict confidence. It will not be part of my inmate file.

None of the information I provide to the interviewer will be shared with my caseworker or any other agency without my prior authorization.

The evaluation results will be presented as numbers (e.g., 25% of respondents indicated they were very satisfied ...), and not identify me in any way.

I understand if I choose not to participate in this study, it will not affect my ability to access programs offered by the Department of Justice.

I understand that I may freely decline to answer questions, and withdraw from the interview at any time.

I hereby give my consent to be interviewed for purposes of the evaluation.

_____

Client

- -

Witness _____ Date

Hello. Can I please speak to _____.
My name is _____. I'm phoning on behalf of Alberta Justice (**OR** I'm phoning from Native Counselling Services of Alberta on behalf of Alberta Justice) and am calling about the Alsike impaired driving program which you attended a few years ago. We are doing some research on the Alsike impaired driver's program and your opinions are very important to us. We are wanting to find out what people think of Alsike, if it has been of any help, and how people have been doing since they attended the program.

This interview will take about 20 minutes. I'm hoping that now is a good time for you to answer some of my questions.

(If not, ask the individual when would be more convenient and set up a time to phone back).

(*If respondent seems to be resistant, emphasize the benefits of Alsike to them by saying*: "We are trying to help people who go through the Alsike program. It is important to us to get your feedback since we need to know if any improvements could be made to our program".)

Anything you tell me will be strictly confidential. Your answers will be grouped with those of a lot of other past Alsike participants and people who attended other programs. Your name will not be included in our analysis of the results. Feel free to ask any questions at any time during this interview. Okay?

(If verification regarding the confidentiality of the survey is requested, have respondent call Michael Weinrath at 427-3441).

ALSIKE IMPAIRED DRIVING PROGRAM EVALUATION

TELEPHONE QUESTIONNAIRE **JULY 1993**

Interviewer's Name

_____

Respondent's Name

_____

Respondent's Phone Number, Last Known Address, and Next of Kin

_____

_____

_____

ALSIKE IMPAIRED DRIVING PROGRAM EVALUATION

TELEPHONE QUESTIONNAIRE **JULY 1993**

I. PERCEPTIONS OF THE ALSIKE PROGRAM

I WILL BEGIN BY ASKING YOU SOME QUESTIONS ABOUT THE ALSIKE IMPAIRED DRIVERS PROGRAM.

1. How much did the Alsike program help you?

not at all	1
not much	2
somewhat	3
a great deal	4
not stated	5

2. How much did Alsike help you to prepare for situations in which you are at high risk to drive while impaired?

not at all	1
not much	2
somewhat	3
a great deal	4
not stated	5

3. Overall, how satisfied or dissatisfied were you with the Alsike Program you attended?

very satisfied	1
satisfied	2
somewhat satisfied	3
somewhat dissatisfied	4
dissatisfied	5
very dissatisfied	6
not stated	7

4. For what reasons were you satisfied/dissatisfied?

_____

5. Anything else you'd like to add about Alsike?

_____

_____

_____

_____

6. Have you ever attended any of the following addictions programs?

AADAC (saw counsellor in office)	1
Alcoholics Anonymous	2
Poundmakers Lodge	3
David Landers Centre	4
Salvation Army	5
Recovery Acres	6
Henwood	7
Riverside Villa	8
Sunrise Residence	9
Slimthorpe	10
Bonnyville Rehabilitation	11
Action North	12
Grande Prairie Addiction Centre	13

II. PROGRAM RETENTION QUESTIONS

I WILL NOW READ SOME GENERAL STATEMENTS ABOUT ALCOHOL CONSUMPTION. THESE QUESTIONS WILL TEST YOUR KNOWLEDGE ON WHAT YOU REMEMBER FROM THE ALSIKE PROGRAM. PLEASE INDICATE WHETHER YOU THINK THESE STATEMENTS ARE TRUE OR FALSE.

7. Alcohol is not digested, but rather is absorbed directly into the blood stream.

True	1
False	2
Not stated	3

8. Most of the alcohol taken into the body is eliminated through the breath and urine.

True	1
False	2
Not stated	3

9. There is a fine line which separates the heavy social drinker from the alcoholic; which statement BEST describes this?

daily drinking	1
tolerance	2
loss of control	3
intelligence	4

10. Alcoholism can BEST be described as:

a disease of the mind	1
a physical disease	2
a family disease	3
a social disease	4

III. ALCOHOL CONSUMPTION

I WILL NOW ASK YOU SOME QUESTIONS ABOUT YOUR ALCOHOL CONSUMPTION.

11. In the last 12 months, have you consumed any alcohol?

yes	1
no	2
not stated	3
not applicable	4

(If yes, ask Q. 12 - 16)

12. In the past 12 months, how often did you generally drink alcohol?

every day	1
4 - 6 times a week	2
2 - 3 times a week	3
once a week	4
once or twice a month	5
less often than once a month	6
never	7
don't know	8
not stated	9

13. In the past week, have you taken an alcoholic drink?

yes	1
no	2
not stated	3
not applicable	4

14. When you are drinking alcohol, how many drinks do you usually have? (a "drink" is defined as 2 oz. of alcohol alone or with mix, 1 bottle of beer, or 1 glass of wine) _____

15. On average, how many alcoholic drinks per week do you have? _____

16. In the last 12 months, have you done any of the following to try to cut down on your drinking?

skipped parties or other social events	1
avoided being with friends who drink a lot	2
gone to bars or pubs less often	3
limited the number of drinks you have had	4
switched from hard liquor to beer or wine	5
started drinking non-alcoholic beverages	6
tried to avoid drinking	7
other _____	8
none	9
not stated	10

IV. IMPAIRED DRIVING

THE FOLLOWING QUESTIONS WILL ASK YOU ABOUT DRIVING WHILE IMPAIRED. YOU ARE REMINDED THAT ALL YOUR ANSWERS ARE STRICTLY CONFIDENTIAL AND WILL BY NO MEANS BE USED IN ANY INCRIMINATING MANNER.

17. Have you driven impaired in the last 12 months?

yes 1
no 2
not stated 3

(If yes, ask Q. 18 and Q. 19)

18. If you did drive impaired, were you convicted or found guilty of a drinking and driving offence?

yes, how many times _____ 1
no 2
not charged 3
not stated 4
not applicable 5

19. In the last 12 months, have you done any of the following to avoid driving impaired?

1 asked someone else to drive
2 took a taxi, bus, LRT or walked
3 stayed overnight
4 stopped drinking early or waited at least one hour before driving
5 used a breathalyzer test before driving
6 other _____
7 not stated
8 not applicable/abstinent

20. Do you currently have a valid driver's license?

yes 1
no 2
not stated 3

(If respondent answers `no', ask the following question).

21. If your license is suspended, what year will you be eligible for having your license reinstated?

_____

(Ask Q. 22 only if respondent has a valid driver's license).

22. For which of the following reasons have you tried to avoid driving after you had too much to drink?

1 afraid of getting caught by the police
2 afraid of having an accident
3 afraid of losing your licence
4 afraid of going to jail
5 felt it was wrong to drive impaired
6 personal reasons such as pressure from family, friends or work
7 other _____
8 not stated
9 not applicable/abstinent

23. When you were last sentenced to custody for impaired driving, how high was your blood alcohol level (.10, .15, .20)?

_____ level
don't know 9

24. Did this impaired driving conviction involve a motor vehicle accident?

yes 1
no 2
not stated 3
not applicable 4

(If `yes', ask Q. 25 and Q. 26)

25. Were you injured in this accident?

yes	1
no	2
not stated	3
not applicable	4

26. Was anyone else hurt?

yes	1
no	2
not stated	3
not applicable	4

(Ask Q. 27 only if respondent has a valid driver's license).

27. In the past 12 months, have you been a designated driver for a person/group?

yes	1
no	2
not stated	3

28. In the past 12 months, have you been a passenger in a vehicle where the driver was impaired?

yes	1
no	2
not stated	3

V. DEMOGRAPHICS

PERSONAL WELL-BEING/HEALTH

I WILL NOW ASK YOU A FEW QUESTIONS ABOUT YOUR PERSONAL WELL-BEING AND PHYSICAL HEALTH.

29. How satisfied are you with your life?

very dissatisfied	1
somewhat dissatisfied	2
dissatisfied	3
somewhat satisfied	4
very satisfied	5
satisfied	6
no opinion/don't know	7
not stated	8

30. Would you describe your life as

very stressful	1
somewhat stressful	2
not very stressful	3
not at all stressful	4
no opinion/don't know	5
not stated	6

31. In general, compared to other persons your age, would you say your health is...

much better	1
better	2
the same	3
worse	4
much worse	5
no opinion/not stated	6

32. Have you cut down on any normal activities due to health?

yes 1
no 2
not stated 3
not applicable 4

33. Do you have trouble with pain or discomfort?

yes 1
no 2
not stated 3

34. Are you limited in the kind or amount of activity you can do at home, at work, or at school because of a long-term health problem? By long-term, I mean a condition that has lasted or is expected to last more than 6 months.

yes 1
no 2
not stated 3

(If `yes', ask Q. 35).

35. Could you indicate what this condition is? (e.g., arthritis, loss of a limb, bronchitis, hepatitis, psoriasis).

_____

I WILL NOW FINISH BY ASKING YOU FOR SOME BACKGROUND INFORMATION ON YOURSELF.

RESIDENCE

36. Do you presently live in a city, town, village, or rural area of Alberta?

Calgary	1
Edmonton	2
other city	3
town	4
village	5
rural area	6
Reservation or Metis settlement	7

37. Do you (or your spouse) currently own or rent your present residence?

own	1
rent	2
other	3

38. How many times have you changed addresses in the past two years?

_____

39. Were you living at your current address one year ago?

yes	1
no	2
not stated	3

MARITAL STATUS

40. What is your current marital status?

never married (single) 1
now married and living with spouse 2
common-law relationship/live-in partner 3
divorced 4
separated 5
widowed 6
not stated 7

EMPLOYMENT

41. What is your current employment status?

employed full-time 1
employed part-time 2
self-employed full-time 3
self-employed part-time 4
unemployed, that is out of work and looking
for work 5
student 6
retired 7
not stated 8

(If respondent is currently employed, go to Q. 42)

42. How many months have you been employed in the last year? _____

43. What kind of work (do/did) you normally do? That is, what (is/was) your job title?

a) Occupation_____

b) What (does/did) that job involve (describe)

_____

RELIGION

44. What is your religion, if any?

No religion	1
Roman Catholic	2
United Church	3
Anglican	4
Presbyterian	5
Lutheran	6
Baptist	7
Protestant unspecified	8
Christian unspecified	9
Native Spirituality	10
Other (specify)_____	11

45. Would you say your religious beliefs are strong or not very strong?

strong	1
not very strong	2
somewhat strong (volunteered)	3
not religious	4
not stated	5

46. Do you attend church service or participate in spiritual ceremonies?

regularly	1
occasionally	2
never	3
not stated	4

SOCIOECONOMIC STATUS

47. In total, how many years of schooling do you have? This includes the total of grade school, high school, vocational, technical and university.

_____ years

(If the respondent has more than 12 years of education, ask the following question).

48. Have you attended:

Non-University (voc/tech, nursing schools)
incomplete 1
complete 2

University
incomplete ..... 3diploma/certificate (e.g., hygienists) 4
bachelor's degree 5
professional degree (doctors, dentists, lawyers) 6
master's degree 7
doctorate 8

49. What is the total income of all the members of this household for this past year before taxes and deductions (circle corresponding category number)

Under	1	26000-	12	60000-	23
6000-7999	2	28000-	13	65000-	24
8000-9999	3	30000-	14	70000-	25
10000-	4	32000-	15	75000-	26
12000-	5	34000-	16	80000-	27
14000-	6	36000-	17	85000-	28
16000-	7	38000-	18	90000-	29
18000-	8	40000-	19	95000-	30
20000-	9	45000-	20	100000 +	31
22000-	10	50000-	21	don't know	88
24000-	11	55000-	22	no	00

50. What is your own total individual income for this past year before taxes and deductions?

$ _____

INTERVIEWER'S COMMENTS

Respondent's cooperation was

cooperative	1
indifferent	2
uncooperative	3

Anything about the respondent or the interview situation that seems important in interpreting the information given?

_____

_____

_____

_____

I declare that this interview was conducted in accordance with the interviewing instructions given by Alberta Justice. I agree that the content of all the respondent's responses will be kept confidential.

_____

INTERVIEWER'S SIGNATURE